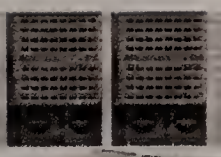
Exclusive Clear Choice Test: Cisco's Catalyst 6500 virtual switch blade sets records for throughput and recovery times.
We created a mammoth test bed with 130 10G interfaces and let out the throttle on a Catalyst 6509 armed with Cisco's new Virtual Switching System. **THE RESULT:** *Throughput of 770 million frames per second.* **THAT'S FAST.** **Page 43.**



NETWORKWORLD

The leader in network knowledge ■ www.networkworld.com January 7, 2008 ■ Volume 25, Number 1

Five data leak nightmares that you should avoid at all costs. **Page 36.**

A Q&A with industry analyst Nick Selby, who argues that even the best data-leak prevention tools won't be enough if you don't have a system in place for classifying data. **Page 39.**

Four data-leak prevention start-ups to watch. **Page 40.**

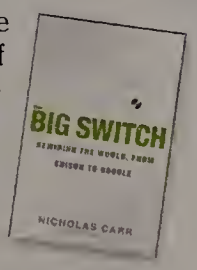
The data-leakage prevention market was red hot in 2007. Go online to find out why so many of the big network and security players snapped up data-leak companies. **www.nwdocfinder.com/3221.**

The IT dept. is a goner, says Carr

BY CAROLYN DUFFY MARSAN

The IT department is dead and the shift to utility computing will kill this corporate career path. So predicts Nicholas Carr in his new book, *The Big Switch: Rewiring the World from Edison to Google* (see www.nwdocfinder.com/3121).

Carr is best known for a provocative *Harvard Business Review* article titled "Does IT Matter?" Published in 2003, the article asserted that IT investments didn't provide companies a strategic advantage, because when one company adopted a new technology, its competitors did the same.



The *HBR* article made Carr the sworn enemy of hardware and software vendors including Microsoft, Intel and HP, as well as of CIOs and other IT professionals. With this new book, Carr is likely to engender even more wrath among CIOs and other IT pros.

"In the long run, the IT department is unlikely to survive, at least not in its familiar form," Carr writes. "It will have little left to do once the bulk of business

See Carr, page 48

Security dominates IT agendas in 2008

Election/Olympic year brings fresh challenges as cutting-edge technologies gain traction

BY NETWORK WORLD STAFF

Will 2008 see the first serious security exploit in corporate VoIP networks? Or will network security breakdowns cast a pall on the upcoming presidential elections and Olympic Games? Will users' Web 2.0 forays open the malware floodgates?

THE YEAR AHEAD
WHAT'S HOT FOR 2008

Experts say security concerns will dominate the network landscape in 2008 whether we like it or not. It won't be all gloom and doom, however. Faster wireless LANs (WLANS) are on the way, enterprise-class open source applications are multiplying and Google is continuing to muscle its way into new markets — raising the bar for competitors along the way.

Here are some highlights of what enterprise IT teams can expect in the new year.

Malware of Olympic proportions

Two high-profile events — the 2008 Olympics in China and the U.S. presidential election — will trigger a stream of exploits, security experts warn.

Olympics-related Web sites and networks are potential places to infect people, says Dan Hubbard, vice president of security research at Websense. "The 2008 Olympics will be used as a lure for fraud, too. Massive amounts on an international scale," Hubbard says.

Also on tap for 2008 are Storm-like botnets with decentralized command-and-control structures that make them much tougher to shut down, says Craig Schmugar, a researcher at McAfee.

"Storm is a trendsetter," Schmugar says of the infamous botnet that goes back to a network attack launched one year ago. "A lot of the spam we see is coming across Storm-compromised machines.," he says.

McAfee also is expecting a wave of malware parasitics, which look for specific files and embed themselves. To combat infection by parasitics, "you have to isolate the parasitic code within the host code," Schmugar notes. "If it overwrites the good code, you may never get it back."

VoIP not a target — for now

Exploits against VoIP systems are one security threat that may not materialize in 2008. It's not that the danger isn't real — it is. VoIP is susceptible to the many exploits that networks in general are heir to, including denial-of-service attacks and buffer overflows. In addition, there are many voice-specific attacks and threats. For instance, two protocols widely used in

See Security, page 12

INSIDE

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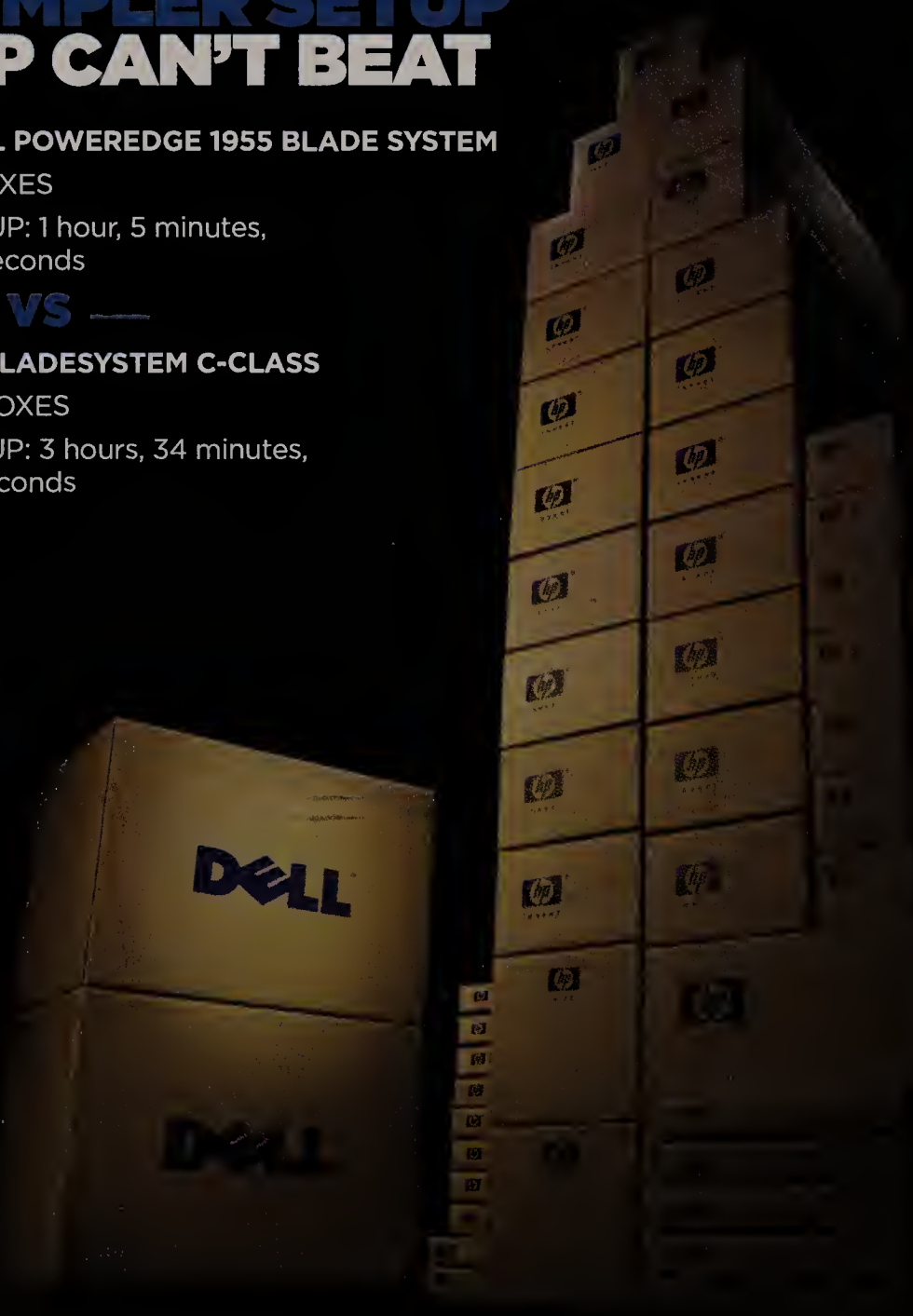

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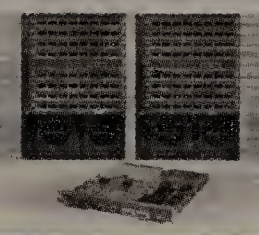
Exclusive Clear Choice Test

Cisco's Catalyst 6500 virtual switch sets throughput record. **Page 43.**



Page 36.

GOODBADUGLY

Nortel, Vonage make up.
Vonage and Nortel have preliminarily agreed to cross-license several patents, ending a dispute between the companies without any monetary payments. Nortel had alleged that Vonage infringed on 12 of its patents, which broadly deal with click-to-call systems, with the management or architecture of VoIP system resources, and with call-tracing methods in packet-switched networks.

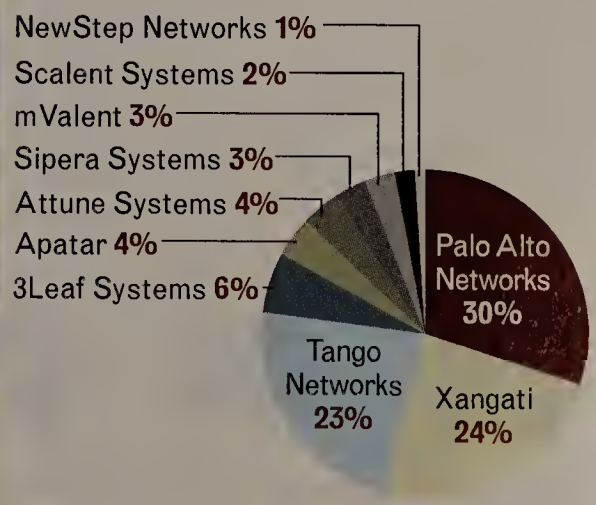
CLECs stay on decline.
Competitive Local Exchange Carriers' share of end-user switched access lines in the United States declined throughout 2006, reaching a low not seen since 2004, the FCC reported this week. According to the FCC, roughly 17.1% of the 167.5 million end-user switched access lines in the United States belonged to CLECs in December 2006, down from 17.9% in December 2005.

Network booby prizes.
Financial firm Cowen and Co. announced its Disruptive Innovation Awards for 2007, as well as two booby prizes: It pointed to Dell's promotion of ruby red and sunshine yellow notebooks as a coverup for a lack of hot intellectual property to market; Verizon got one for a new cell phone that comes with a "usurious" billing plan.

POLL

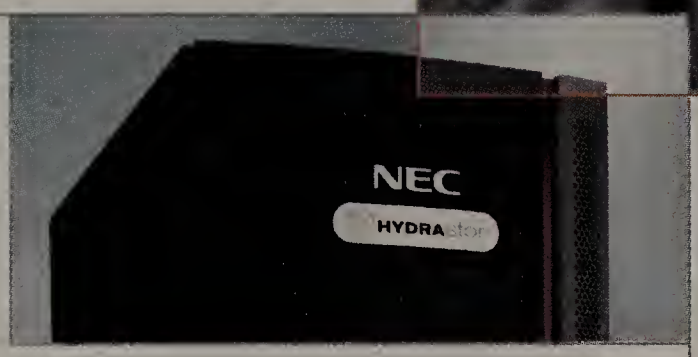
A snapshot of how networkworld.com visitors voted on a key networking issue last week:

Which start-up is your favorite?



Total voters for this poll: **388**

Vote and discuss: www.nwdocfinder.com/3246



Is your business prepared for catastrophic data loss? Are you prepared to save the day?

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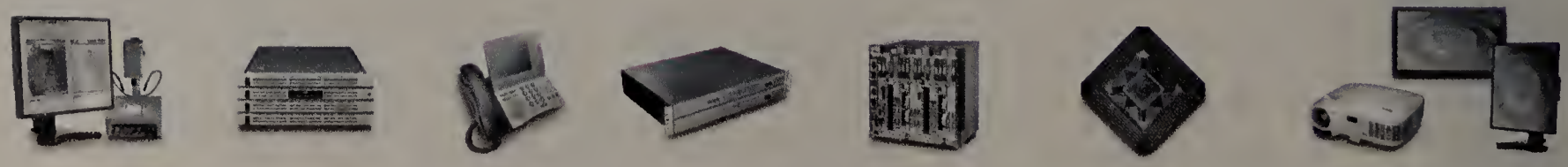

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PEERSAY

Getting ready for certification

Re: Is CCVP worth 500 hours to you? (www.nwdocfinder.com/3226):

I am currently studying for the CCVP and I think the amount of studying varies not only based upon the skill level but also based upon how much you can access real gear. I hope we aren't merely gauging time to memorize but time to properly test and configure — time to really understand the material. Therefore I think something that we have neglected to mention is the cost and time to set up a proper lab. (I'm assuming not everyone going for this cert is currently working for someone who has a VoIP implementation or that their employer would be excited to let them play around.)

> "Why in the world would [Microsoft] enable an IPv6 feature at this point in time by default?"

Setting up a VoIP lab is to say the least a bit pricey and somewhat time-consuming. I have spent thousands and several hours just to have call managers, POE switches, phones, gateways, SRST, and other items like wireless and video for my lab. Do you think we could collaborate and not only get an estimate for time when we are talking about studying for a cert but also about initial investment with a lab? This is also something I would love to see — both estimates of time based upon skill and a guestimate of cost before I consider taking on a new certification. That would truly help you assess if it was "worth it."

Jeremy Beck

Discuss at www.nwdocfinder.com/3226

Information-centric security

Re: Endpoint security: "essential security" or "impossible dream"? (www.nwdocfinder.com/3227:

While this is a very good synopsis regarding the current state of thinking by groups such as Jericho and others in the security industry, I wonder why there is not a single mention of the concept of information-centric security?

This is surprising since this is one concept that would seem to be integral to the whole concept of de-perimeterization and the goals of Jericho. What is there in the endpoint approach that answers the basic necessary question of "who is accessing what data and what they are allowed to do with it"?

At most, the authenticated endpoint device becomes only the most basic of proxies for authorized access to the network. On the other hand, a granular access and audit control system that operates on a whitelist basis at the data level and incorporates the clearly understood trust level boundaries that the author alludes to in his article, makes the endpoint device issue a non-issue.

Rob Lewis

Discuss at www.nwdocfinder.com/3228

Ending with a whimper

Re: AOL to end support for Netscape browser (www.nwdocfinder.com/3229):

Oh, how the mighty have fallen....

Apeshansky

Discuss at www.nwdocfinder.com/3230

Vista and IPv6

Re: Microsoft Vista's IPv6 raises new security concerns (www.nwdocfinder.com/3231):

Why in the world would the software giant enable an IPv6 feature at this point in time by default? Who in Redmond is smoking what? I am certain that Mr. and Mrs. Joe America are hopping right on the IPv6 over IPv4 train as it comes down the track. The same people who cannot get wireless to work are now the tech gurus of the day, using the bright shiny new protocol. Come on Microsoft, the issue is not Potato security — oops, Teredo security — it is applicability. No wonder Vista runs so slow.

Joe Klein

Discuss at www.nwdocfinder.com/3231

The future of thin clients

Re: How I spend my Christmas vacation (www.nwdocfinder.com/3240)

Last year I paid $400 a line for 1000 base-T connections at a remote site. This year, I will use 802.11n at every opportunity. The benefits with thin clients are undeniable and a perfect match to the enormous increase in server power that multiple cores gives and the matching technology like the Geode in thin clients.

Robert Pogson

E-mail letters to jdix@nww.com or send them to John Dix, editor in chief, Network World, 118 Turnpike Road, Southborough, MA 01772. Please include phone number and address for verification

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BLOGOSPHERE

■ **Boston-Power lands $45M jolt for new battery technology.** Buzzblog's Paul McNamara writes: Last February we brought you news of a Massachusetts start-up that is tackling one of the mobile worker's most irritating problems: limited laptop battery life. Today that company, Boston-Power, has landed $45 million in additional venture funding to continue development and dramatically ramp up production. Boston-Power has been making bold claims regarding Sonata [the company's next-generation lithium-ion battery technology] — that it can charge to 80% capacity in 30 minutes, or twice as fast as existing technology; and that its batteries will not fade over the course of three years.
www.nwdocfinder.com/3232

■ **How Google quietly gained control of open source to compete with Microsoft.** Microsoft Subnet blogger Mitchell Ashley writes: How do you take on the dominant player in your industry, like Microsoft? Well, you aren't going to easily outspend or outmarket them. Microsoft has a tremendous amount of momentum and software assets creating a huge barrier for competitors. And Microsoft has some of the best and brightest working for them. Sound like a bleak picture to compete against? . . . The answer is open source, and that's exactly the approach Google has taken. Top to bottom Google runs its business on open source GNU/Linux. Free. No licensing costs. Add MySQL as the database — even better. Google can expand its business using commodity Intel/AMD hardware and keep software costs very low, without adding revenues to Microsoft's bottom line. It would probably be tough for someone like IBM to say it's done the same to the degree of a Google. **www.nwdocfinder.com/3233**

■ **Cisco's new CTO Padmasree Warrior was wrong about the Apple iPhone.** Cisco Subnet blogger Brad Reese posted a long memo from Warrior on Jan. 10, 2007, that lists all the reasons why Warrior had "morning after" doubts that the iPhone would be successful. The impracticality of the touchscreen, a belief that there was nothing disruptive about the device, a denouncement that battery life was "problematic" and the lack of a keyboard are all named as complaints. Now, a year later, with the iPhone clearly a runaway success, Reese asks, " Now I don't mean this in a bad way towards John Chambers, but exactly why did he hire Padmasree Warrior to be the new Cisco CTO?"
www.nwdocfinder.com/3234

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DEMO:

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www.nwdocfinder.com/3243

BEST OF NW'S
NEWSLETTERS

How successful was Juniper's free training to Cisco pro?

IT careers and training: In May last year, Juniper made its boldest move yet to lure Cisco certified pros to become certified in Juniper's Junos enterprise routers by offering them free training. The program provided participants with access to a range of courses aimed to produce a raft of new Juniper certified professionals to help the Cisco rival increase its share of the enterprise routing market. The program closed Dec. 31, and in mid-December Juniper claimed that 12,000 Cisco certified folks had enrolled in the program since its inception, 2,300 participants have become Junos-certified in enterprise routing, and that 130 countries were represented by participants in the program. We spoke to one individual who works as a reseller of Cisco and Juniper equipment about why he took part in the initiative. John Podolanko is a pre-sales engineer at Qwest Services, part of the Qwest service provider company, and most of his clients are large enterprises, banks and hospitals. He specializes in security and says about 80% of his business is Cisco-related, though its organization has partner status with both Cisco and Juniper. Podolanko says he was aware of Juniper's security offerings and had worked with Juniper gear for customers "who didn't want to buy Cisco." He took up the offer of free training with Juniper about five months ago because "it didn't cost me a dime." **www.nwdocfinder.com/3236**

Convergence & VoIP: Continuing our series on the progress of IP Multimedia Subsystem (IMS), we highlight perspectives and progress from Verizon featuring excerpts from an interview we had recently with Bill Goodman, Verizon's director for Multimedia Services Architecture. Like other large carriers, Verizon has been working on converged network architectures and, according to Goodman "before we called it IMS, we had spent 10 years working on integrated environments. As the industry developed an IMS framework, we've been happy to see it move forward as a standard." In 2005, Verizon brought in multiple vendor platforms as a proof of concept to refine the company's requirements for IMS, and 2007 was largely a year to validate those requirements and to progress with implementation planning. Verizon doesn't currently offer any commercial services on an IMS platform, but it does offer SIP-based wholesale, business and commercial, VoIP services.
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Microsoft readies two Windows security updates

Microsoft plans to issue two security updates for its Windows operating system products Tuesday as part of its regular software patch cycle. One of the updates is considered critical for Windows Vista and XP users because the flaw it fixes could be used by attackers to install unauthorized software on a victim's computer. The second update, rated important for all Windows users, could allow an attacker to run software with a higher level of privilege on a system than would normally be allowed. **www.nwdocfinder.com/3247**

'Diehard' virus variants flexing muscle. New "downloader" malware known as Trojan-Downloader.Win32.Diehard surged to the top of Kaspersky Lab's Top 20 virus list for December because of its "explosive propagation," the security firm said. When loaded onto a victim's machine, downloader malware can enable an attacker to download malicious code to exploit and control the machine for activities ranging from spam to information theft. The .dc variant of Diehard, which grabbed the lab's second-place ranking, first appeared on Dec. 21, and within a matter of days it constituted an estimated 80% of all malicious traffic for the month. Two other Diehard variants ranked fourth and seventh place on Kaspersky Lab's December list. **www.nwdocfinder.com/3248**

NetApp boosts storage management with Onaro buy. Storage vendor Network Appliance plans to buy Onaro, a Boston company that develops management software designed to help IT administrators improve the performance of their storage-area networks. Onaro's SANScreen suite includes an engine that models the relationships between components in a distributed system; a repository that monitors the storage services that applications need; and a change repository for tracking device and service changes. NetApp said the deal will close in the first quarter. Financial terms were not disclosed. **www.nwdocfinder.com/3249**

U.S. Patent Office gets funding increase. The U.S. Patent and Trademark Office (USPTO) has received a budget increase of about 9% for the government's 2008 fiscal year, prompting praise from some tech groups. The USPTO received President George Bush's full funding request of $1.9 billion in a budget bill passed by the U.S. Congress in mid-December and signed by Bush Dec. 26. Patent Office funding has been one piece of a contentious debate in Congress over the past year on what changes are needed for the U.S. patent system. Most groups involved in the patent debate agree that the USPTO needs better examinations in order to avoid issuing bad patents, and critics point to frequent questionable patents, including a 2005 patent for an antigravity device. **www.nwdocfinder.com/3250**

Sears downloads spyware? Sears and Kmart customers who sign up for a new marketing program may be giving up more private information than they'd bargained for, a prominent antispyware researcher claims. According to Harvard Business School Assistant Professor Ben Edelman, Sears Holdings' My SHC Community program falls short of U.S. Federal Trade Commission standards by failing to notify users exactly what happens when they download the company's marketing software. "The software is not something you'd want on your computer or the computer of anyone you care about," Edelman says. "It tracks every site you go to, every search you make, every product you buy, and every product you look at but don't buy. It's just spooky." Sears launched the My SHC Community in March, intending it to be a vehicle for customers who want a voice in the company's direction. **www.nwdocfinder.com/3251**

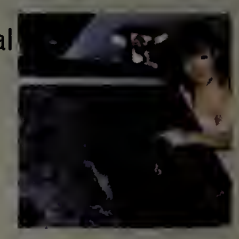
Big businesses turn to messaging security services. More large businesses are turning to a combination of message-security services and on-site security appliances to guard against malicious behavior carried out via e-mail and other messaging software. According to IDC, an increasing number of the biggest corporations use security services to clean spam out of their e-mail traffic before the messages reach corporate mail servers. These big businesses combine services with local security software and appliances that further lock down messages by employing data-loss prevention, encryption and tight policies on data access and use, the research firm says. In 2006, more than 60% of message-security money was spent on software, with the rest split between services and appliances. By 2011, that will shift so software and appliances are tied at about 35% each and services reaches about 29%, IDC predicts. **www.nwdocfinder.com/3252**

Spotlight CES

Marvell's 802.11n chipset hits 450Mbps
Chip-maker Marvell Technology Group has unveiled a new, high-end 802.11n Draft 2 chipset targeting a range of networking and multimedia products that can put to good use the 450Mbps data rate the wireless chips deliver. The new silicon, dubbed TopDog 11n-450, supports sending and receiving three "spatial streams." A stream of data is encoded into three substreams, each transmitted by a separate antenna in a technique called multiple-input multiple-output. These multiple streams, ideally coupled with the signal-reflection phenomenon called multipath, is what makes possible the jump from Wi-Fi's top data rate today of 54Mbps. Marvell is demonstrating TopDog at this week's Consumer Electronics Show. **www.nwdocfinder.com/3253**

Asus unveils terabyte laptop
With 1T byte of storage space, the newest laptop from Asus should satisfy the storage needs of all but the biggest of power users. The M70S, due for release at CES, is targeted at the fast-expanding multimedia sector of the laptop market and packs two of Hitachi's new 500G-byte hard-disk drives. The drives can be organized in a RAID 0 configuration, where data is distributed between the two drives to provide a performance boost on a single drive, or as RAID 1, where data is mirrored on each drive to provide redundancy in case of drive failure. **www.nwdocfinder.com/3254**

LG.Philips demos 52-inch multi-touch LCD
LG.Philips plans to unveil a 52-inch multi-touch LCD which it says is the largest display of its type in the world. Multi-touch screens differ from conventional touchpanels because they allow input from more than one spot on the screen so, for example, an image can be manipulated from opposite corners. LG.Philips' 52-inch screen uses an infrared image sensor to gauge input from fingers or other instruments and can recognize such gestures as the movement of fingers. **www.nwdocfinder.com/3255**



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Oregon revamps data centers

Cisco-based network revamp could save state as much as $12 million a year

BY JIM DUFFY

The state of Oregon is embarking on a data center consolidation and virtualization project that officials say will save $10 million to $12 million per year.

The project, which costs $43 million, began in 2005 with the construction of a new data center in Salem, the state capital, in which 11 state agency data centers serving 45,000 employees will be consolidated. The project is scheduled to conclude in June 2009 with a new Gigabit Ethernet backbone and virtual circuits replacing a frame relay network to support new applications and a converged infrastructure.

It will mark the first time Oregon has standardized its data center and network infrastructure architectures as well.

"Going to a shared service infrastructure for IT was going to significantly reduce costs, as well as standardize the environment, which is going to improve quality," says Mark Reyer, administrator of the Oregon State Data Center (SDC). "It will improve the cycle time and agility of the application programming efforts to be able to develop on standard platforms."

Reyer spent 15 years with IBM directing the company's data center outsourcing and consolidation business for such Fortune 500 clients as Allied-Signal and United Technologies. With the Oregon SDC, Reyer is also looking to drive energy efficiency and carbon emission reduction — state managers expect to reduce power consumption by 30%, with an additional 25% reduction upon completion of server consolidation.

The data centers to be converted under the program belong to 11 state agencies, including Administrative Services, Consumer and Business Services, Corrections, Employment, Forestry, Housing and Community Services, Human Services and Oregon State Police.

Oregon is standardizing on Cisco Catalyst 6500 and 3750 switches, 7200 and 2800 series routers, and MDS storage-area network (SAN) switches. The state also is implementing Cisco firewall, intrusion detection/prevention and network access control products.

Oregon has no plans thus far to implement Cisco's VFrame Datacenter orchestration product, which was introduced along with Cisco's Datacenter 3.0 release last summer. VFrame and Datacenter 3.0 have been slow to gain market traction to date. Data Center 3.0 is centered on virtualizing and orchestrating server, storage and network provisioning resources to achieve cost and resource-provisioning efficiencies.

"We're evaluating a lot of the data center newer releases but we're not [implementing them] at this point," says Al Grapoli, network systems manager at the SDC.

The project involves 1,520 servers, 425TB of SAN storage, two 1,200 MIPS mainframes, 50,000 network devices, 225 Unix and 50 AS/400 midrange processors, and 7,000 switches and routers. Within the new data center, rows of servers and storage devices will be interconnected via 10 Gigabit Ethernet, while Gigabit Ethernet will connect resources within each row.

Externally, as many as 30,000 T-1 frame relay circuits in a hub-and-spoke configuration will be replaced with Ethernet virtual circuits in a range of speeds from 5M to 100Mbps, officials say. Oregon is looking to Qwest and its Metro Optical Ethernet service to fulfill this requirement, Grapoli says.

Oregon also is looking to have several statewide hubs instead of just one in Salem.

"Right now everything homes here at the data center so we'd like to distribute that out further," Grapoli says.

Some of the state's larger agency locations will have direct 100Mbps Ethernet fiber links to the new Gigabit Ethernet backbone ring, Grapoli says. Portland, meanwhile, will have 622Mbps OC-12 connections between offices.

Within Salem, state agencies will be connected to the SDC over a 1G to 2Gbps SONET ring, Grapoli says.

The redundant Gigabit Ethernet backbone will implement MPLS to support applications such as telehealth and online education, Grapoli says. So far, implementing MPLS has been the biggest challenge of the SDC project, officials say.

"We learned a lot there in terms of the variations in the IOS command set that were not obvious at the beginning," Grapoli says. "What we're doing is looking at the MPLS management offering that Cisco has ... [and] making sure what's applied on a switch or router is what should be applied, and making sure we're not knocking things down when the set-up commands are applied."

Next steps include transitioning agency IT functions over the next two years and rolling out collaborative communications and security enhancements such as VoIP and end-to-end encryption, officials say.

The SDC's data center consolidation initiative is part of the state's six-year plan to remodel IT services and adhere to the federal government's 1993 consolidation standards. ■

Racks of servers populate Oregon's new data center. A $43 million investment in consolidation and virtualization will help the state achieve annual IT savings of as much as $12 million.

■ **Not everyone's consolidating data centers. See story, page 32.**

InBrief

IBM buys Israeli start-up XIV

IBM last week announced its acquisition of XIV, an Israeli manufacturer of storage-area network equipment. XIV's main product is Nextra, a storage system based on a grid of standard hardware components. The companies would not put a price on the deal, but reports in the Israeli financial press valued it at $300 million to $350 million. XIV employees will join IBM's system storage business unit, the companies said. The XIV purchase is the latest in a line of storage-related acquisitions for IBM, which recently bought Softek, FileNet and NovusCG.

Streaming service links TVs directly to Internet

LG Electronics and Netflix will work to develop a set-top box that can stream movies over the Internet directly onto a television screen, the companies announced last week. Netflix, best known for its mail-order DVD rental service, began offering a video-on-demand service for impatient movie buffs last year. That service, though, only plays movies on a PC, and with 6,000 titles available for download offers a more limited selection than the 90,000 titles Netflix offers by mail. The new streaming service will let customers watch on a high-definition television, using a networked set-top box that LG plans to ship later this year.

Security
continued from page 1

VoIP — H.323 and Inter Asterisk eXchange — have been shown to be vulnerable to sniffing during authentication, which can reveal passwords that can be used later to compromise a voice network. Implementations of Session Initiation Protocol, an alternative VoIP protocol, can leave VoIP networks open to unauthorized transport of data.

Still, there have been few exploits, and none that were widespread or crippling to businesses. "We are not hearing about attacks. We don't think they are happening," says Lawrence Orans, an analyst with Gartner.

Part of the reason could be that the largest VoIP vendors use proprietary protocols, such as Cisco's Skinny, Nortel's Unistim and Avaya's variant of H.323, Orans says. That makes them difficult to obtain and study for potential security cracks. "These systems are not readily available to the bad guys," he says.

The bad news is that some experts don't expect the lack of attention from attackers to last. "VoIP is, in essence, a time bomb, poised for a massive exploit," says Paul Simmonds, a member of the management board of the Jericho Forum, a user group promoting new principles for secure networking.

Waiting for 802.11n

On the wireless front, the buzz is all about 802.11n. Enterprises eager for the next generation of WLAN technology are so enthralled with the promise of 802.11n that they're not waiting for the standard to be finalized to plan deployments. Some companies are weighing the use of products based on the Draft 2 IEEE 802.11n standard, which promises data rates of 300Mbps and throughput up to 180Mbps.

The contrast with conventional WLAN gear — with its maximum data rate of 54Mbps and throughput of less than half that — is so dramatic that at least some enterprises are willing to pay a premium for 802.11n gear and adopt a not-quite-standard technology on the assumption that any changes in the standard can be dealt with via software updates.

Still, there are plenty of issues early adopters must surmount. In a few cases, the adoption of 802.11n will force companies to beef up their edge switches to support Gigabit Ethernet. To get the full benefit of 802.11n capacity, they may have to upgrade existing power-over-Ethernet infrastructures to the new 802.3at standard, which was barely entering the market at the close of 2007. In addition, WLAN management software from some vendors may lag behind hardware rollouts, a troubling shortcoming, at least in the short term.

Data center dilemmas

In the data center, the challenge for users who championed virtualization and green computing in 2007 is to deliver the benefits they promised — something industry watch-

See Security, page 23

Cisco accelerates shift to software, data center

Cisco is expected to make much bigger and more dramatic moves into software in 2008 as it fleshes out its strategy to make the network the key enabling platform for all IT operations.

Unified communications, collaboration, Web 2.0 and data-center virtualization will continue to drive the company's momentum as Cisco seeks to add more software and service capabilities to network infrastructures that heretofore have resided on high-end computers, servers, storage devices, PCs and special-purpose computing appliances. To that end, Cisco will compete more heavily with entrenched IT systems vendors – and partners — such as EMC, HP, IBM and Microsoft.

"A set of challenges for them is to maintain their friends while they try to eat their friends' lunch," says Jim Metzler, an analyst at Ashton Metzler and Associates. "In particular, as Cisco moves into the data center, this will strain its relationships with EMC and IBM.

Some analysts believe Cisco's ambitions may lead to the acquisition of a major software vendor — perhaps BEA Systems.

Cisco's move up the stack requires a strong portfolio of collaboration, unified communication and platform applications well beyond what they have today, says Robert Whiteley, a senior analyst at Forrester Research. Cisco will have to acquire this talent and absorb a platform or application company of considerable size. "BEA would be a logical but lofty choice," Whiteley writes in his blog.

Others agree. "Cisco needs to build an ecosystem around them," says Zeus Kerravala, senior vice president of global enterprise research at the Yankee Group. "Cisco's been talking about the network as a platform. But a platform for what? Other Cisco stuff? That's not really a platform."

Metzler believes Cisco is going to flesh out its Service Oriented Network Architecture (SONA) in 2008. SONA is designed to move customers toward virtualized services — security, voice, mobility, applications, management, processing and storage — with the network layer acting as an intelligent fabric tying everything together.

"In 2008 they have to make SONA real," Metzler says. "By that I mean, lay out what services belong in the network and why. Some of these services need to be network-centric and some need to be application focused."

At the very least, Whiteley expects to see Cisco lean more heavily on its $150 million stake in virtualization software maker VMware.

Perhaps VMware will play a role in Cisco's upcoming data center switch, which observers refer to as "DC3." This switch melds together Cisco Catalyst LAN and MDS SAN switches. It is intended as a successor to Cisco's venerable Catalyst 6500 as a high-density 10Gbps interconnect that supports — and virtualizes — three underlying data center technologies: Ethernet/Etherchannel, Fibre Channel and InfiniBand, sources say.

"Their switch line needs a new flagship product," Kerravala says. "The 6500 has been around a long time. [2008] should be the year we see a new product."

Another product priority for 2008 is in application acceleration. Cisco's Wide Area Application Services and Application Control Engine products are technologically inferior to products from much smaller companies and face growing competition from Cisco's larger rivals.

"The area I am most concerned with is application delivery," Metzler says. "In 2008 Cisco needs to pull away from the pack. They have long trailed Riverbed in this area and have competition from lots of other players, including Juniper."

Without confirming details, Cisco acknowledges that application acceleration and data-center switching will be focal points for the company in 2008.

It is building "validated designs" for the way IT constructs branch, WAN, campus and data-center operations, says Marie Hattar, Cisco senior director for Network Systems. Cisco's service-enabled Integrated Services Router targets the empowered branch, while the Catalyst 6500 and other switches are components of the Campus Communications Fabric, she says. These trends will accelerate in 2008, Hattar says, this time targeting the WAN and data center.

— Jim Duffy

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Google: Life at 10

As Google nears the 10th anniversary of its incorporation, the company is branching out with side projects that could include a television offering and an online service giving people access to their own medical information.

Goal No. 1, however, is fending off challenges that might disrupt its dominant position in the online advertising marketplace, says Karsten Weide, director of IDC's digital media and entertainment program. "Google's top priority is to diversify their revenue sources," he says, explaining that Google relies on search ads for 99.1% of its revenue.

The most immediate challenge is the advertising in online videos, Weide says. Google's acquisition of YouTube was designed to shore up a weakness in video advertising, but this is an emerging market that is still in flux, and billions of dollars will go to the eventual winner, he says.

Google's other major challenge is in the mobile advertising market. Android, the company's platform for building mobile phones, is a good start, but this is an area that rival Yahoo could invade.

Despite these major strategic challenges, expect Google and its nearly 16,000 full-time employees to spend lots of time on side projects that will expand the company's reach well beyond the world of online search.

Google and Microsoft are pursuing projects aimed at giving people new tools for managing their healthcare. A prototype of Google Health gives consumers a central repository for their health information, which they can can choose to share with doctors and family members.

"I'm not sure how [Google] plans to implement this, exactly," says Philipp Lenssen, a former Web developer who tracks the company on the blog Google Blogoscoped. "There's quite a lot of privacy risk in this application," he says.

Google projects in 2008 could include upgrades to Google Apps, a hosted service that's challenging Microsoft Office; more development related to Google Gears, an open source technology for building Web applications that work offline; and the creation of a social-networking platform. Some rumors have Google testing social-networking software at Arizona State University, with plans for a general release in the near future.

In addition, Google has begun the groundwork for some type of TV offering. Details have been scarce, but Google has hired a team of software engineers to develop TV products.

As if that's not enough, Google has a stake in one of the biggest telecommunications events in 2008: the U.S. Federal Communications Commission's auction of blocks of the 700MHz spectrum, which starts Jan. 24. The auction has garnered a significant amount of attention because the FCC attached open-access rules to the "C block," a valuable chunk of spectrum whose reserve price has been set at $4.6 billion. Under these rules, the spectrum's licensees are prohibited from blocking or slowing Internet traffic from their competitors and must also allow all devices to connect to their network.

Google is among the telcos and Web companies planning to bid on the spectrum; however, experts differ on what they think its intentions are. Mark Winther, group vice president and general manager at IDC, thinks the challenge of building out a high-speed broadband network on the 700MHz spectrum could make Google think twice before going all-out to operate a network that would compete with traditional carriers.

"Building and operating a network requires a lot of expertise that Google doesn't have right now," Winther says.

Harold Feld, senior vice president of the nonprofit public interest telecom law firm Media Access Project, thinks that Google will bid aggressively to win the spectrum even if it doesn't plan to directly operate a network on it.

"Google is not looking at becoming a direct competitor with the major telcos," he says. "Rather, I think they want to use the spectrum to entice people who are network operators to build out the kind of open-access network that Google wants. If Verizon or AT&T buys that spectrum, then Google will have to live with whatever kind of open-access network the carriers want to build."

— Jon Brodkin

Network World Senior Writer Brad Reed contributed to this story.

- Ten-year, $4 billion award for the military telecom deal DTS-P II, which will provide data services to military bases in the Pacific, is expected in March.
- The Department of Homeland Security is expected to award its OneNet contract for a single, unified network to replace separate networks run by the various security agencies that were combined to form DHS in 2003.
- CTIA Wireless 2008 runs April 1-3 in Las Vegas.
- Nortel and Microsoft will integrate their respective network access control products via Microsoft's Network Access Protection protocol in Windows Server 2008.
- RSA Conference 2008 runs April 7-11 in San Francisco.
- Interop Las Vegas runs April 27-May 2.
- PC vendor Everex due to launch sub-$300 Linux notebooks by midyear.
- The U.S. Department of Defense is expected by midyear to place billion-dollar orders for voice and data services through the federal government's Networx telecommunications services contract.
- Intel's Menlow chipset for mobile Internet devices and ultra-mobile PCs is scheduled to ship by midyear.
- The Large Hadron Collider (the world's largest particle accelerator) at CERN, near Geneva, Switzerland, is scheduled to begin operation in May.

- 25th anniversary of the first successful test of the DNS system on June 23, 1983, at the University of Southern California in Marina del Rey.

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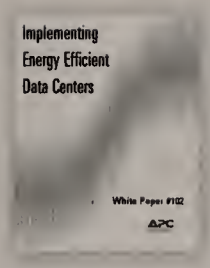

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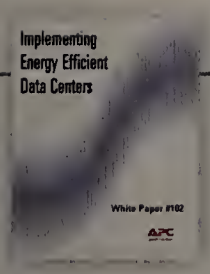

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Microsoft's challenges swing toward online

BY JOHN FONTANA

As 2008 kicks off, Microsoft has its financial house decked out, with fiscal 2007 revenue up nearly 16% and profits up more than 16.5%. Even though its cash reserves have dropped from $60 billion in 2004 to $37 billion in 2007, the company is able to use acquisitions to keep up when R&D falls behind. Still, Microsoft has a host of challenges staring it in the face, including the challenge represented by the familiar, bespectacled mug of its founder. Here are some of the big ones:

1. Bye-bye, Bill.

Yes, as in Gates. In July, Gates will leave his full-time position at the company to devote more time to his philanthropic work. Experts say Microsoft's technology won't suffer, but its image will. Gates will continue to serve as chairman and will be an advisor on key development projects. His departure could be a sign of things to come, however, because CEO Steve Ballmer now is on the clock. Ballmer and Gates are the same age, and Ballmer joined Microsoft five years after Gates founded the company.

2. Get Vista in high gear and flesh out the client road map.

February is going to be an important month for Microsoft on the services-platform side (see No. 3) and the client operating-system side. The first service-pack milestone for Vista is coming in February, and Microsoft is hoping it will be the spark that ignites mass adoption. More importantly, Microsoft has to flesh out what comes after Vista; its client operating-system road map does not exist. Why is that important? Experts say that in the time it took Microsoft to get from XP to Vista, Google went from zero to mortal enemy. Time is of the essence if Microsoft wants to hold on to the power it gets from controlling the desktop.

3. Launch a services platform.

In February, Microsoft will host a ceremonial launch of Windows Server 2008, Visual Studio 2008 and SQL Server 2008. The trio is the guts of Microsoft's services platform, on which the company will ride into the new software-plus-services era. The launch also aligns Vista SP1 with Windows Server and such network security features as Network Access Protection. Early numbers from a *Network World* survey, however, show the server might be a hard sell. Half of 687 respondents said Windows Server 2008 is nowhere on their road map.

4. Define the services business — especially for partners.

Microsoft has always been a partner-driven company, but online services might make partners climb into the back seat. "The role that Microsoft appears to have been positioning partners for is as agents for Microsoft services," says Paul DeGroot, an analyst with Directions on Microsoft. "If Microsoft's online services strategy depends on partners bringing them customers, it is going to fail. Partners are not going to do that."

5. Deliver on advertising platform investments.

In the race with Google, Yahoo and others in the lucrative Internet advertising game, Microsoft in 2007 acquired three companies: Aquantive (advertising platform), AdECN (advertising exchange) and ScreenTonic (mobile advertising). At $6 billion, Aquantive represents Microsoft's biggest acquisition ever. In 2008, Microsoft will need to show some return on those investments.

6. Get cool.

Microsoft hasn't been cool for a while, and it needs to develop some swagger for the rapidly changing enterprise, Internet and distributed computing landscape. Whether it is Zune, PC and online games, or mobile devices, Microsoft needs a breakout. "Being hip and cool would be very beneficial," says Peter O'Kelly, an analyst with the Burton Group. "They are seen in a lot of areas as a follower."

7. Stay on top of other key tasks.

Microsoft needs its unified communications platform to get off to a quick start to ensure that it can move voice from hardware to software. With the late-year release of its Hyper-V technology, virtualization is another area where Microsoft will be challenged. In addition, the company must reaffirm that its integration of Windows and open source is a genuine community-building effort, not some sinister plot. Lastly, the company must get its green strategy in order, if for nothing more than positive public relations. ■

FUTURE HIGHLIGHTS

Here are some key product launches, events and anniversaries to watch for in the year ahead

- The FCC will begin auctioning the 700MHz frequency spectrum, the last significant, nationwide chunk of bandwidth available for the foreseeable future, on Jan. 24.
- DEMO 08 runs Jan. 28-30 in Palm Desert, Calif.
- Juniper Networks is expected to make a significant enterprise announcement — code-named Hurricane — including its entrée into LAN and data-center switching, on Jan. 29.

- The 25th anniversary of Apple's introduction of Lisa, the first personal computer with a GUI. Unveiled in January 1983, the Lisa listed for $9,995 and came with 1MB of RAM and a 5MB hard disk.
- Microsoft is due to launch keys to its services platform — Windows Server 2008, SQL Server 2008, Visual Studio 2008 — on Feb. 27.
- Cisco is expected to release a new data center switch as part of its Data Center 3.0 initiative.
- IBM is expected to release Version 1.0 of Symphony, a free suite of productivity applications designed to challenge Microsoft Office.
- The Payment Card Industry Security Standards Council will publish a new payment-application security standard and certification program to augment its current 12-point Data Security Standard.

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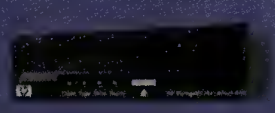

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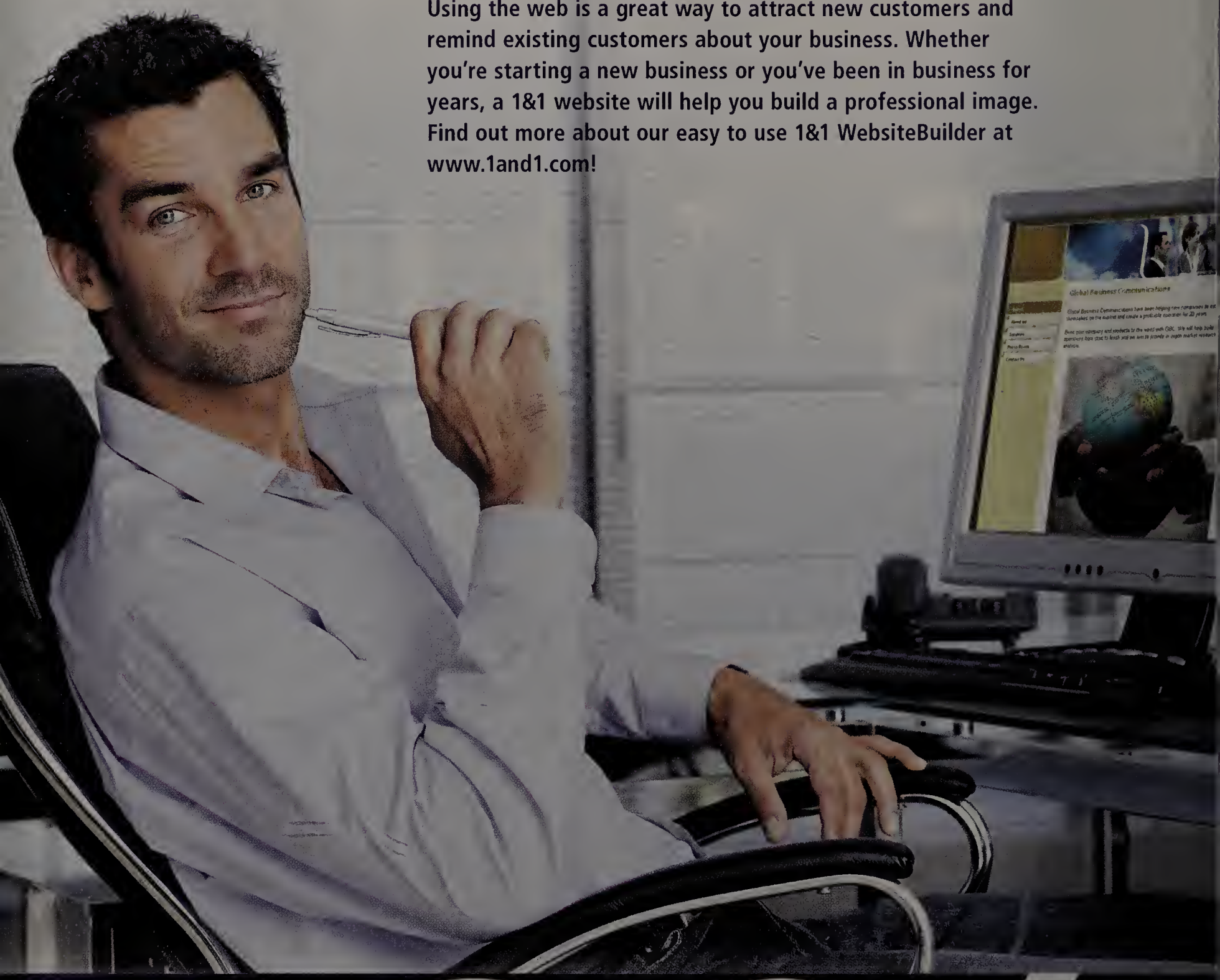

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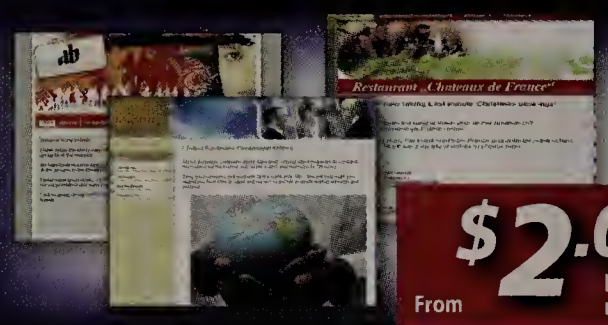

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- Cisco Live conference (which incorporates its Networkers Conference) runs June 22-26 in Orlando.
- Bill Gates will relinquish day-to-day Microsoft duties to pursue philanthropy.
- Microsoft plans to release its first hypervisor technology, Hyper-V.
- LinuxWorld Conference & Expo runs Aug. 4-7 in San Francisco.
- The 10th anniversary of Google, founded by Larry Page and Sergey Brin in September 1998.
- Interop New York runs Sept. 15-19.
- The 30th anniversary of the first electronic spreadsheet, VisiCalc, invented by Dan Bricklin.
- First mobile phones based on Google's Android due to ship by year-end.
- Candidates for a new cryptographic hash algorithm must be submitted to the National Institute of Standards and Technology by Oct. 31 to be considered in the competition to select a new standard.
- The 20th anniversary of the launch of the Morris worm, reputed to be the first computer worm on the Internet, is Nov. 20. Devastating at the time, investigators estimated it affected 6,000 computers.
- The Sarbanes-Oxley Act deadline for small public companies to submit auditor's attestation report is Dec. 15.
- WiMAX option will be built into the Montevina version of Intel's Centrino processor, due by year-end.
- Mozilla's Firefox 3.0 browser due for release by year-end.

Security
continued from page 12

ers say will be no small feat.

As projects move beyond the planning phase in 2008 into broader deployment, data center managers will need to evaluate how they're going to manage and support these new technologies without overhauling their entire infrastructure.

"We will see a bit of a virtualization hangover at first because while a lot of people have embraced the technology and seen some success on x86 servers, virtualization forces IT to look differently at managing an environment," says Robert Whiteley, senior analyst at Forrester Research. "And the greening of IT — that is going to be a challenge because a lot of companies don't have a full grasp on what it is yet."

For starters, management technology will become more critical as data center managers for the first time "face islands of hypervisors within their IT shops," which will have to be managed as a cohesive whole to truly cash in on the benefits of the technology, says James Staten, principal analyst at Forrester Research.

On the green front, industry watchers say that working toward a more efficient computing environment isn't going to be easy for most data center managers because of technical, political and other reasons outside IT's control.

"IT needs to start understanding more about data center facilities and find ways to design data centers to eat up less power," says Zeus Kerravala, senior vice president of global enterprise research at the Yankee Group.

Open source acceptance

In the open source arena, many believe users' uncertainty about open source will shrink so much that their questions around it will evaporate in 2008. "For me, the big story of open source in the enterprise is that it's becoming a non-story," says Barry Crist, the CEO of Centeris (now Likewise Software), which makes software to integrate user authentication services among Windows, Linux, Unix and Mac. "There was so much hand-wringing, but what I am seeing at the corporate level is this has become uninteresting to them. They are comfortable with the mix between commercial and open source," he says.

Meanwhile, developments with power management, virtualization, mobile devices and data centers will drive open source and Linux in 2008.

For example, the Tickless Kernel Project gives the operating system the ability to go to sleep for several hundreds of milliseconds and wake up only when there is something it needs to do. These kinds of features will open 2008 opportunities for Linux and open source within mobile and embedded devices, where power management is a requirement.

In addition, the Linux Standard Base, a certification program that ensures that applications can be written once and run on many Linux distributions, is being updated at the Linux Foundation. "These trends are going to create more applications for Linux and start to create a flywheel effect where lots of applications beget more users who beget more applications," says Jim Zemlin, CEO of the foundation.

Web 2.0: Poised for enterprise role

Still trying to earn corporate acceptance are Web 2.0 technologies, such as blogs, RSS feeds and wikis, which will take on an increasingly important enterprise role in 2008.

"If I look at the Web 2.0 space in the enterprise, I see a lot of experimentation right now, and a lot of frustration," says Forrester analyst Oliver Young. "Are enterprises ready to deliver on the value the businesses are asking for? Probably not yet. But I think in 2008 they're going to get much closer."

Wikis probably will have the biggest positive impact, says Paul Gillin, a writer and commentator on the tech industry and former executive editor of *Network World* sister publication *Computerworld*. "If you have a large number of people who have to share information, e-mail is a horrible way to do that," he says.

Web 2.0 technologies have their challenges, however. "The challenges are getting people to use it," Gillin says. In addition, it can be hard to get funding for Web 2.0 projects, because some management teams aren't convinced the tools deliver real business value, Young says.

Security is another potential problem. "Web 2.0 can make it easier for employees to share data, and in doing so make it easier for employees to abuse data," Young says. "The best way companies are starting to approach this is through strong permissioning, compliance and archiving," as well as education to make sure employees know what constitutes acceptable sharing.

Life in the trenches

Amid the storm of new technologies and security challenges, IT staff will have to make do with budgets that aren't growing as much as they did in 2007.

Worldwide, spending growth will be moderate, at 5.5% to 6% in 2008, down from 6.9% growth in 2007; and economic uncertainties will take a toll in the United States, in particular. IT spending growth is expected to drop from 6.6% this year to 3% to 4% in 2008, IDC reports.

On the hiring front, the most sought after candidates will be the IT hybrids — who can be loosely defined as professionals who have as much business acumen as technical know-how. "Hybrid jobs require IT professionals to sit down at a business meeting and be able to predict and deliver the technology the business will need to meet its goals and go about implementing it," says David Foote, CEO and chief research officer at Foote Partners. "The premise of IT-business hybrid roles started at the CIO level. In 2008, you will see it as far down as the $60,000-per-year operations people." ■

The value of unified communications

The tools are evolving and the market is shifting

BY BERN ELLIOT

As unified communication technologies mature, the focus is shifting from making a business case for unified communications to concrete and tangible deployment issues. To succeed, it is critical that business leaders, IT managers and planners understand where unified communications solutions offer value and how they improve competitiveness.

Unified communications is designed to eliminate barriers that have traditionally separated voice calls, e-mail, instant messaging and conferencing in all forms. Once these communication media are carried over a common IP network, it is possible to manage them from a single point and use them with common devices, enabling companies to transform key business processes with improved communication flows.

In addition to integrating communication channels — within the enterprise and with key constituents — unified communications offers a way to integrate communication functions directly into business applications. Gartner calls this capability communications-enabled business processes (CEBP). By 2012, 80% of leading organizations will have adopted some form of CEBPs for competitive improvement.

The largest single value in unified communications lies in its ability to reduce human latency within corporate processes and improve a business' ability to respond and be agile. Integrating communication functions directly into systems and applications that individuals use is particularly effective at reducing human latency.

For instance, if CEBPs enable an engineer to fix a fault on a production line 30 minutes faster than would be possible otherwise, the benefit is the 30-minute savings and the value of restarting the line faster, which is likely to prevent a delay amounting to thousands of dollars per hour.

Gartner divides unified communications into three functional areas:

- Personal unfied communications is geared toward the individual and includes smart phones, PDAs and other types of devices. These provide access to voice, IM, presence information and business applications. Presence provides information about the availability and status of individuals or shared resources. This form of unified communications is geared toward supporting individual or personal productivity. For instance, rich presence (which shows the availability of individuals across multiple channels, such as IM, phone, mobile phone and video) enables individuals to be more productive because it simplifies their work tasks. In addition, when applied in other ways, it can support collaboration work and enterprisewide objectives.

> "The largest single value in unified communications liles in its ability to reduce human latency within corporate processes and improve a businesses' ability to respond and be agile."

- Work-group unified communications is oriented toward supporting collaborative and team efforts. Examples of ways to improve performance include the use of presence to speed identification of an individual with the right skills to address a problem, the use of business rules to route or escalate communications, or the use of virtual meeting rooms to speed rapid-response teams.
- Enterprise unified communications integrates communications with enterprisewide and department-level applications, business processes and workflows. An example of this is credit-card authorization. When a bank receives a request for a credit authorization, an application reviews the request in real time. If the transaction is outside the credit-card holder's usual behavior, it is flagged as being at high risk of fraud. The system makes an outbound notification to the credit-card holder (phone, e-mail, Short Message Service). If the system succeeds in reaching the card holder, the individual is requested to confirm his identity. As a result, instead of rejecting a transaction from a valued customer, the bank can allow the transaction, improving service and reducing its and the client's fraud exposure.

Products that support elements of unified communications include VoIP systems, e-mail, audio and Web conferencing, videoconferencing, voice mail, unified messaging and IM. These are evolving toward integration, but each also is developing in its own way. For instance, voice, video and Web conferencing capabilities will converge, and IM's presence capabilities will expand to all live channels, including voice, conferencing, video and e-mail.

Not all architectures will be optimum, nor will all survive.

Solutions from vendors such as IBM and Microsoft will focus on how to expand from their e-mail and Web-conferencing base to encompass the broader unified communications portfolio, while solutions from Avaya, Siemens, Cisco, Alcatel and Nortel will use the voice products as the foundation to their unified communications offering.

Because no single vendor has all of the elements needed for a complete solution, new partnerships are also redefining the market. Examples include Microsoft and Nortel, which have created a relationship called the Innovative Communications Alliance to partner on unified communications products and solutions, and IBM's relationship with Cisco for unified communications product collaboration.

These companies compete against each other in one or more unified communications product categories but also work together to provide complete portfolios to clients. The unified communications market will consolidate, and some of the partnerships will turn into battles, while others will evolve into tightly unified solutions.

The complexity of unified communications and lack of industry experience means that organizations will have to plan carefully to avoid failures and meet expectations. Best practices will be critical to success. They include initially focusing on a subset of unified communications functionality, ensuring that key stakeholders are involved in the planning, providing plenty of user training, conducting extended pilot periods, measuring success and failure of initial trials, and learning from early experiences and pilots.

Elliot is research vice president at Gartner. He can be reached at bern.elliot@gartner.com.

Got great ideas?

Network World is looking for great ideas for future Tech Updates. If you've got one, and want to contribute it to a future issue, contact Editor in Chief **John Dix (jdix@nww.com)**

IBM

_INFRASTRUCTURE LOG

_DAY 89: Our power and cooling costs are out of control. We spend the bulk of our IT budget just keeping the data center cool. I told Gil we need to go green in a big way.

_DAY 91: Gil took us green...kelly green, to be exact.

_DAY 93: You don't go green with paint. You go green with IBM Cool Blue™ technology and energy management services. Advanced server and storage virtualization can help consolidate our boxes to lower energy usage. And the new IBM POWER6™ systems help us use less energy doing the same amount of work.[1]

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GEARHEAD

Mark Gibbs

Wi-Spy spies on Wi-Fi

While we continue to investigate our problem with deferred procedure calls (see the recent Gearhead at www.nwdocfinder.com/3222) — a problem that seems to have mysteriously vanished again — we wanted to bring to your attention a tool that, if you are doing wireless stuff, you are going to want.

The tool is Wi-Spy 2.4x (www.nwdocfinder.com/3223) from the wonderfully named MetaGeek. The Wi-Spy is a USB (1.1 or 2) spectrum analyzer for the radio frequency range from 2400MHz to 2483.5MHz with a resolution of 328KHz. It can detect signals in the range -110dBm to -6.5dBm with an amplitude resolution of 0.5dBm and has a sweep time of 165 millisec.

In other words, this is a pretty snazzy piece of hardware, but two other features make the Wi-Spy outstanding. The first is its software, Chanalyzer, which runs on Windows 2000 or later with .Net 2.0 installed. Linux and Mac support are also available via third-party software.

Chanalyzer's user interface shows three graphs that share a common X-axis of frequency; you can select this axis to be displayed as frequency or as Wi-Fi channels or Zigbee channels (I plan to cover Zigbee in more depth in a future Gearhead column — for now, see www.nwdocfinder.com/3224).

The top graph is the Spectral View. This is a "waterfall graph" (one that scrolls down over time) that plots a time period (from 15 seconds to one hour) against the frequency range, with each point color-coded by the signal's amplitude. This highlights bandwidth use over time.

The graph below that is what MetaGeek calls the Topographic View. This display shows the popularity of the spectrum by plotting the percentage activity for each frequency and amplitude over the selected time period. In other words, it is a spectrum utilization map.

The bottom graph is the Planar View, which plots amplitude against frequency and shows current, average and maximum amplitudes. There also are two markers that you can place on the frequency axis to get data for a specific frequency.

What this deluge of data shows you is how the spectrum is being used and abused for a given location. For example, you can see where devices such as microwave ovens, Bluetooth devices and cordless phones might be adding noise and reducing Wi-Fi throughput.

When Wi-Fi or Zigbee channels are selected you can click on one or more of their labels on the frequency axis to overlay a highlighted zone that shows the channel frequency limits. Wi-Fi channels are 5 MHz apart, but to ensure more or less complete isolation they need to be 25 MHz apart. This is important where other people's nearby access points might be a problem — most people never change their access points' default use of channel 6, so to avoid overlap you should use channel 1 or 11.

Note that the European Union also allows the use of channels 12 and 13, and channel 14 is the only one allowed to be used for Wi-Fi in Japan.

The other outstanding feature is that you can save and replay your Wi-Spy spectrum captures and share them with others. MetaGeek's library of user contributions (www.nwdocfinder.com/3225) shows what the graphs generated by devices such as microwave ovens and cellular phones look like — these are useful when trying to track down Wi-Fi problems.

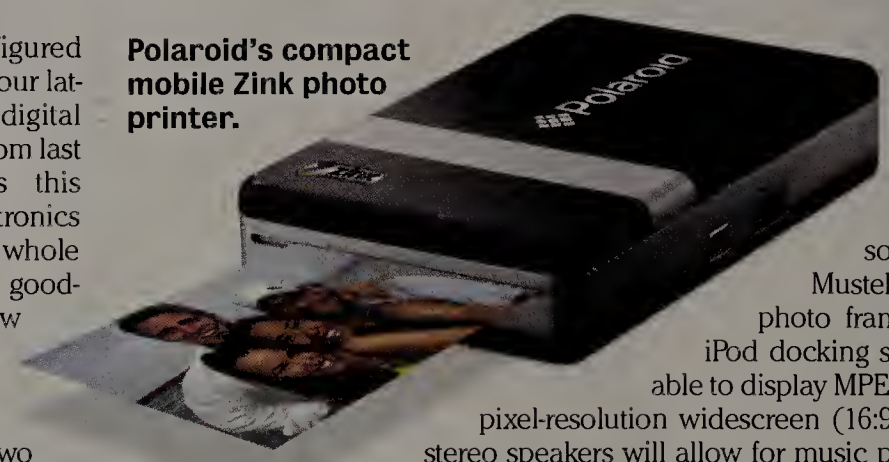
MetaGeek also offers a freeware rewrite of that old hacker favorite, NetStumbler (last updated in 2004), called Inssider. Wi-Spy 2.4x is outstanding, and an excellent value at $399. Highly recommended.

Gibbs is on-air in Ventura, California. Connect to mgibbs@gibbs.com.

Keith Shaw

COOLTOOLS

CES 2008: New gadgets galore



Polaroid's compact mobile Zink photo printer.

Just when you've figured out the settings on your latest smart phone, digital camera or GPS device from last holiday, along comes this week's Consumer Electronics Show in Las Vegas with a whole new batch of electronic goodies to get you ready for 2008. Here's a bunch of new items I can't wait to see at the show:

- Zink Imaging, which made a splash with its inkless digital-photo printing system at last year's DEMO 2007 show, will announce two brand partners and two hardware partners at this week's show. First up is Polaroid, which will introduce a compact mobile printer that uses Zink's technology to produce 2-by-3-inch color prints instantly and without any ink cartridges. Zink says the printer will be shipping in the first half of the year. Other partnerships include brand partnerships with Alps Electronics and Tomy, and a hardware partnership with Foxcon to produce an all-in-one digital camera and printer system for the second half of 2008.
- Speaking of mobile printing, PlanOn (which makes the Docupen portable scanner) will launch the PS900 Printstik, a mobile printer that includes Bluetooth for thermal printing from any Bluetooth device, including notebooks, PDAs and cell phones. Print that text message!
- Dash Navigation, another company that debuted at a DEMO conference (DEMOfall 2006), says it is taking pre-orders for its Dash Express real-time GPS device and service. The Dash Express ($600, available in mid to late February) will include a wide-area Internet connection to let drivers access real-time traffic information, Internet search and automatic mapping updates. The Internet access service will cost between $10 and $13 per month, depending on pre-payment plans.
- I'm a sucker for devices that combine two or more features into a new class of device, so I'll be happy to look at the Mustek PF-i700, a 7-inch digital photo frame that has an integrated iPod docking station. The PF-i700 will be able to display MPEG movies on its 480-by-234-pixel-resolution widescreen (16:9 aspect ratio) display, and stereo speakers will allow for music playback. For users without iPods, the device includes support for digital memory cards, including SD, xD, MMC, MemoryStick and MemoryStick Pro, as well as a USB 2.0 port for thumb drives. The PF-i700 will be available in March for $130.
- LaserShield Systems will show off its Sparrow device, a high-speed Internet adapter ($130) that works with the company's LaserShield instant home security system ($199.95). The company's monitoring service ($29.95 per month) sends a signal at regular intervals through the day to the Sparrow device, to make sure it's operational. If the device doesn't respond because of a power loss or Internet connection failure, the monitoring service immediately contacts the owner.
- My favorite device at the show could be a prototype of the newest Norazza Data Destroyer. Norazza has been making CD and DVD data shredders for a while, and they are upping the ante with a 100-lb. device that can destroy hard drives, PDAs and cell phones, by crushing them.

There is a ton of more coverage planned for CES; be sure to head online to check out our video, blogging and audio podcasts from the show.

Shaw can be reached at kshaw@nww.com.

_INFRASTRUCTURE LOG

_DAY 69: All we need is one specific piece of info. Gil almost had it, but his hand cramped. How are we supposed to find trusted business information when these massive volumes of conflicting info keep pouring in?

_Gil just grabbed a stuffed panda.

_DAY 71: The answer: IBM solutions for leveraging information. Now we can cleanse info and standardize source data fields for consistency and accuracy. I can create a single, accurate and unified record of info across our source systems. Everyone can make better decisions.

_Just in time—I think we ran out of quarters.

IBM

Information Management

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Apple's next mold breaker?

NET INSIDER
Scott Bradner

My editor pointed out that this issue has a forward/predicting theme and suggested I keep that in mind when figuring out what to write. After pondering that for a while I decided to write about what I'd like to happen rather than predict what may actually happen when Steve Jobs announces new Apple products at the Macworld Conference & Expo later this month.

A few months ago one of the Apple rumor Web sites predicted Jobs would announce a product that was some sort of entirely new concept in computing at Macworld. I haven't seen anything more about such a device but I've been dreaming of what I'd like to see (and would order).

In my dreams the new product would combine the long rumored Apple tablet computer with the iPhone to create a sort of all-in-one portable device.

This device would be small at 8.5 x 11 inches (or smaller) and very thin — around a half-inch. It would also include:

- A nonslip back.
- A high-resolution, multitouch screen — 200 ppi or greater resolution.
- Full iPhone functions with support for wired or Bluetooth headsets.
- iTunes and full iPod music and video functions.
- A GPS receiver.
- Full Leopard distribution with no restrictions on what applications it can run.
- Published APIs for all iPhone functions.
- VoIP support.
- Enough flash memory to hold the core operating system along with iPhone and iPod support.
- 100GB or more of hard disk.
- User upgradeable/replaceable memory, CPU and disk.
- 10/100/1000Mbps Ethernet and dual USB 2.0, maybe firewire.
- An external USB DVD/CD read/write drive
- A flash card slot.
- Two replaceable batteries with a total of more than 10 hours lifetime when Leopard is running in user mode, more than 250 hours when operating in iPhone standby mode.
- Wi-Fi, WiMAX, Bluetooth, EDGE and G3 radios — more than one of which can operate simultaneously.
- A large iPhone-like, in-screen, multitouch keyboard.
- An external USB keyboard option with bracket that holds computer in a laptop-screen-like orientation.
- System comes enabled; carrier contract only needed if cellular phone services wanted
- No carrier lock-in required.
- Enterprise-level security controls, including remote lock and erase.

My handwriting is bad enough that having a stylus-based input mode would be of no use, but others might find it useful.

In my dreams at least some GPS device vendors would port their navigation and location software to this new device and integrate it with Google Maps and so forth.

I do not know what to call such a device — iEverything seems a bit funky.

I'd like one of these! Too bad it's just a dream device.

Disclaimer: As far as I know, Harvard does not dream, so the above must be my own fantasy.

Bradner is Harvard University's technology security officer. He can be reached at sob@sobco.com.

Carrier landscape continues to shift

EYE ON THE CARRIERS
Johna Till Johnson

Every now and then, several trends combine to totally reshape an industry. Indications are that this is happening in 2008: When the dust finally settles (which may not be for a while), the telecom market will be very different.

Here's how:

- Bandwidth appetite skyrockets. As I've noted in previous columns, I'm expecting an exponential increase in appetite for bandwidth — consumer as well as enterprise — over the next five years. But it's starting already, particularly in the enterprise. Organizations I've spoken with recently anticipate triple-digit bandwidth growth for the next year. And it's often at the edges of the network (branch offices continue to grow at a rate of 10% year over year). That means telecom managers should investigate alternative carriers, WAN optimization gear and branch-office products to keep costs down.
- Unified communications takes off. Unless you've been living under your desk in 2007, you've heard about voice, video, e-mail, instant messaging and presence merging to provide multimode real-time collaboration. I'm seeing these systems move out of the planning stages in 2008. Watch how this affects the growth of companies and product portfolios such as Microsoft OCS, IBM Lotus, and the traditional VoIP players (Nortel, Avaya, Siemens, ShoreTel, Mitel). Not everybody will succeed here — but some will.
- Hosting and outsourcing goes mainstream. Virtually all of my enterprise clients are outsourcing something: data centers, VoIP systems, router management, firewalls. And we're going to see that trend accelerate in 2008. Companies such as Equinix that capitalize on these trends are having a booming year — expect it to continue.
- Video ratchets up. As predicted last year, telepresence has started to pick up steam. But room-to-room video is just the tip of the iceberg. Streaming video continues to grow: AT&T reports that more than half of iPhone users have watched YouTube videos on their phones in 2007 (see next trend). And look for interactive person-to-person video to gain momentum, as well. The big winners? Makers of video gear, but also some unexpected players: The storage folks. Creating, storing, indexing and accessing all that data requires tremendous amounts of storage. IDC recently released a report indicating that storage requirements would outpace storage media within the next few years. Video is a key reason why.
- Wireless data explodes. The folks at Ericsson are predicting nearly 4 billion wireless subscribers worldwide, mostly broadband, by the end of 2008. Interestingly, broadband wireless isn't just for mobility — it's also providing alternatives to wired connectivity (including backup for remote sites). And users are increasingly deploying high-bandwidth applications — particularly TV and video — over wireless. Finally, it's worth remembering Google's plans to bid for the 700MHz spectrum in '08.

The impact overall of these trends is to launch a wholesale reshaping of the telecom industry. Telecom managers, take note: It will be particularly important to stay on top of technology trends for the next few years. Fortunately, if you're reading this, you've come to the right place!

Johnson is president and senior founding partner at Nemertes Research, an independent technology research firm. She can be reached at johna@nemertes.com.

IBM

_INFRASTRUCTURE LOG

_DAY 82: There are so many risks out there. Traffic spikes, natural disasters, mergers. How do we prepare? One in three companies don't recover from unplanned downtime.[1] Would we?

_Gil wrapped everything with bubble wrap. Just to be safe.

_DAY 83: I'm preparing with IBM Business Resilience Solutions. IBM Business Continuity Services help us assess our risks and design a proactive plan to deal with them. IBM Tivoli gives us the visibility to diagnose and fix infrastructure problems. And the robust availability features of the IBM System p™ give us maximum uptime.

_No more bubble wrap. And I have to mail a package. Great.

Tivoli.

Take the business continuity assessment at:
IBM.COM/**TAKEBACKCONTROL**/READY

[1]Source: "Business Continuity Unwrapped," Continuity Central, 2006. www.continuitycentral.com/feature0358.htm.

Security: What will be hot in 2008?

RISK & REWARD
Andreas Antonopoulos

There are two ways to predict the future with 100% accuracy. Either you have the power to shape the future to your predictions (the God method) or you make your predictions vague enough so they fit most conceivable outcomes (the Nostradamus method). For those of us who lack omnipotence but desire to write something meaningful, that leaves the alternative: extrapolate from in-depth research, solid statistics and current trends and hope for minimal volatility (disruptive innovation or externalities) in the outcome. That process will not be 100% accurate, but even 90% is still extremely valuable. In January 2009 I will revisit these predictions and honestly assess my crystal-ball gazing.

In the murky, milky swirls within my USB connected iCrystalBall, I see the following developments in security in 2008:

- Accelerating enterprise adoption of mobile platforms will lead to more security threats on mobile devices. With carriers, device vendors and mobile operating systems opening up, there will be more rich applications on the horizon with the concomitant security concerns. I expect to see more mobile-security start-ups developing encryption and authentication software solutions for phones, PDAs and so on. I also expect mobile carriers will increase their investment in mobile-security R&D and marketing.
- Hard-drive encryption on the desktop will continue and spread to the data center. In 2007 more than a fifth of participants in our security research funded laptop hard-drive encryption. I expect this trend will accelerate with the introduction of more hard disks with built-in encryption and Trusted Platform Module capabilities. I also expect hard-drive encryption will start moving into the server and data center markets as companies adjust to compliance mandates and increasing identity theft from corporate databases. Expect encrypted drive technology to roll into server and storage lines from more vendors, and for unit sales to rise steadily.
- Network access control (NAC) sales will continue to fall short of the hype. Appliance-based NAC deployments will continue to grow in a steady but not spectacular fashion. Meanwhile, infrastructure NAC or "forklift NAC" will continue to underwhelm customers through its lack of interoperability and high cost of deployment.
- Carrier and ISP-based managed security services for small and midsize businesses (SMB) will multiply and spread in the face of burgeoning demand. SMBs lack the skills but need the security, and they increasingly will outsource to specialists security functions ranging from "clean pipe" firewall and distributed denial-of-service protection to spam-virus-malware filtering.
- The identity-theft market's profits were more than $100 million in 2007, which made it equivalent to No. 3 in profits in the security market. In 2008, black market profits will surpass those of the top-three security pure-play companies, fueled by companies not reporting breaches to law enforcement.
- Virtualization-based compartmentalization of laptops and desktops for security reasons will accelerate. Companies will deploy secured virtual machines as corporate sandboxes on desktops and laptops to control configurations and contain applications and data, using technology from VMware, Citrix, Parallels, Kidaro and others.

I hope you enjoy your holidays. May you find much success in 2008 and beyond. The first year of "Risk & Reward" has been a tremendous honor and pleasure for me, and I thank you for your readership and feedback.

Antonopolous is senior vice president and founding partner at Nemertes Research, a technology research firm. He can be reached at andreas@nemertes.com.

Facebook fiasco highlights privacy concerns

CACHE ADVANCE
Linda Musthaler

I've never been a fan of social networking sites. I don't use LinkedIn, MySpace or Facebook, or other services that offer to share my information with a circle of my "online friends." The main reason I've avoided these services is that I've always been leery of how the companies running these services might use or otherwise fail to protect my private information. I've been expressing my skepticism for years, ever since I came out against Plaxo in 2004.

Since the controversy over Facebook Ads and its Beacon technology hit the fan last month, it seems my social network privacy paranoia is totally justified. Prescient, even.

In case you missed the news, Facebook was forced to do an about-face with its new, automated, word-of-mouth advertising service. Individual users, security experts and privacy watchdogs all complained that Facebook was gathering data surreptitiously about people who use Facebook or services from Facebook partner companies, such as Blockbuster and Fandango. These services' users had their online movements and activities tracked, logged and sometimes published without their knowledge or permission. According to Facebook, the purpose of collecting this information was to be able to present highly targeted ads to Web users and the people in their social networks.

For the past month, people have been expressing their outrage and their shock. I'm outraged, but I'm certainly not shocked. The technology to collect this usage information has been available for some time. It's just that Facebook is the first company with the guts to try to use it for financial gain.

Blame it on the economics of the Web. There's a lot of content and an innumerable list of services provided via the Internet. Since it takes money to provide content or a service, there are basically two ways to fund what we get over the Web. One, the user pays directly. Two, the service provider uses advertising to offset the real cost. (Chances are you didn't pay to read this column, so thank the advertisers who support the production of this fine publication for the "free" content.)

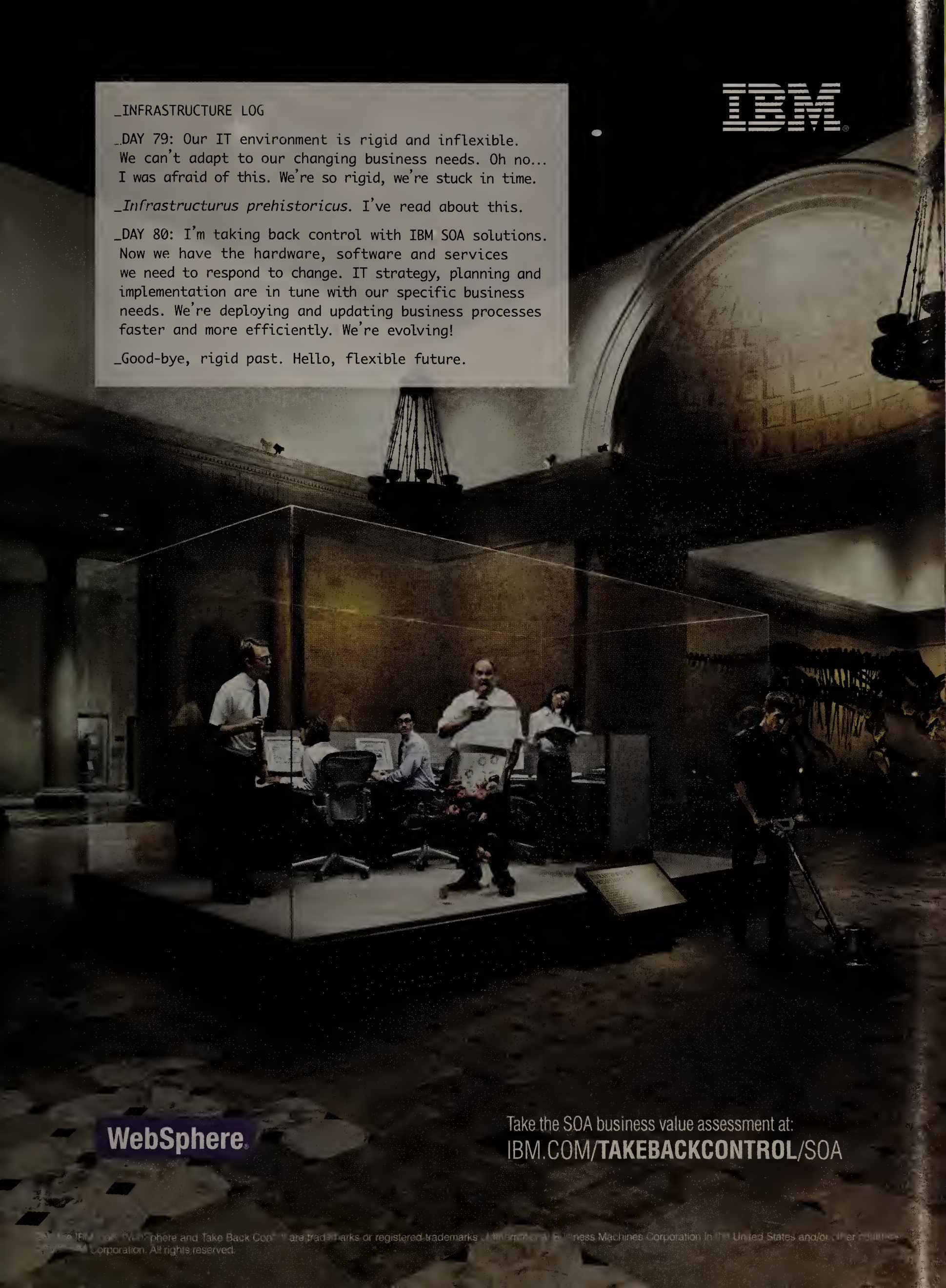
As users of Web-based services, we are extremely reluctant to pay for things ourselves. There's a perception that if it's on the Web, it should be free. We've gotten used to having sophisticated services — travel planning, entertainment delivery, research capabilities, comparison shopping and yes, social networking — all without cost to us.

But someone has to pay to deliver the content or services, so many Web site owners turn to advertising to support their business. Unfortunately, it's not cheap to provide the application development, the database and storage infrastructure, and the operations labor.

The funding schemes for social networks are no different. It costs a lot of money to develop applications and provide storage space for the inane details of our lives. If Facebook can't take in money from its users, it has to squeeze money from advertisers. And guess what? Advertisers expect bang for their bucks. Beacon was designed to provide the bang. I'd venture to say there isn't an advertiser in America that isn't drooling over the prospect of getting access to the wealth of highly personal detail in an application like Facebook. Oh, to be able to pinpoint precisely the likes and dislikes of 20 million people!

There's just one catch. Just because the people who pay to help you provide a service want access to all that personal information you collect, that doesn't make it right. Facebook Ads and Beacon started us down a slippery slope, and no one knows how far it is to the bottom. As for me, I'll maintain my paranoia and try not to feed the advertising frenzy.

Musthaler is a principal analyst at Essential Solutions, a Houston-based technology assessment firm. She can be reached at lmusthaler@essential-iws.



When one data center isn't enough

Disaster recovery, latency concerns make consolidation a tough sell

BY JON BRODKIN

Data center consolidation is all the rage as enterprises look to collapse geographically distributed data centers into one or two locations that are less expensive and easier to operate.

But data center consolidation isn't for everyone. Bucking the trend to combine locations, some companies are building new data centers or adding to their existing footprint by renting space in co-location facilities.

Disaster recovery is one of the most common reasons that enterprises stick with multiple data centers, says analyst Arun Taneja of the Taneja Group.

"When you have multiple data centers they can act as disaster-recovery sites for each other, and therein lies the value," Taneja says. "Having one data center is never going to be enough. I'm going to have to have a disaster-recovery site whether it's my own or I borrow from somebody."

Concern about latency is another reason for sticking with geographically distributed data centers. Vendors such as Citrix Systems say they enable data center consolidation with speedy application-delivery systems, but in general it's better when data is used near where it is created, Taneja says.

Even companies that are consolidating should consider whether they have systems that must remain distributed, says Forrester analyst James Staten. "You may have certain services or applications that require rich interfaces with a client, which is not all that easy to do over a wire from a headquarters data center," he says. "In that case, it makes sense to have geographically dispersed data centers."

Global financial-services institutions may also need data to stay in specific geographies to comply with government regulations, he adds.

Apps Associates, a business in Westford, Mass., that helps customers implement Oracle software, used to have one data center in Hyderabad, India, where most of its work was being done. Then it opened a data center in Westford last year and is preparing to go live with a third data center inside a nearby co-location facility.

Employee growth in the United States fueled the expansion, but the company also was concerned about disaster recovery and latency issues that would have arisen had the company stayed with a single data center, says Drew Farris, Apps Associates CIO.

"It was better to segment where the materials lived depending on the project," he says. "We didn't want to have to put in Citrix and a bunch of terminal servers and all those pieces that help to mitigate latency. That's an investment we didn't feel made sense."

For its production applications and customer-facing systems, Apps Associates wanted redundancy in power, air conditioning and fire suppression systems, but it would have been costly to maintain that support infrastructure at its own data center, Farris says. So the customer-facing systems went to the co-located facility, where he says they can place a 1-teraybte rack at a reasonable price.

The distributed data-center model has its challenges, says Farris, who led a consolidation project when he was CIO at the Iron Age shoe company before taking the Apps Associates job in January 2007. With just one data center, it's easier to prevent cases of "stealth IT projects," involving applications IT isn't aware of.

"Depending on what the company is doing, I'm a proponent of different models. There is no clear answer [for everyone]," Farris says.

Geo Engineers, an environmental consulting firm in Redmond, Wash., decided it needed a second data center because of the company's growth, but also wanted more security due to a major storm a year ago that knocked power out for three days.

"Business continuity [is important]," says IT manager Courtenay Bernier. "We want to make sure we're up all the time."

Geo Engineers recently rented space in a co-location center operated by AT&T. The company's client-facing applications are housed at the outside facility, but Geo Engineers continues to use its Redmond data center for staging and pre-production.

Against the grain

Consolidation is clearly being considered by most IT executives. Forty-seven percent of U.S. companies have consolidated data centers to save money, along with 32% of non-U.S. companies, according to the Symantec State of the Data Center Report.

Another study by the vendor BT INS found that 39% of IT organizations have completed a data-center consolidation project in the last three years, and nearly half are considering or planning such a project. Just 14% have no plans to consolidate.

The most obvious examples of companies bucking the consolidation trend are probably Google and Microsoft, Forrester's Staten says. "That's simply because they're getting into the situation where they're owning more and more of the cloud," he says. "The cloud, of course, is globally dispersed."

The biggest challenge in operating distributed data centers is staff inefficiency, Staten says. Multiple data centers require extra staff, extensive traveling or additional costs for outsourcing, he says.

Effective operation of distributed data centers requires strong central control, says Bryan Doerr, CTO of Savvis, which has 31 data centers and provides data-center management services that allow customers to consolidate. "The solution starts with something rather mundane, and that's a rigorous set of processes for controlling a highly common set of configurations that can be repeated over and over," he says. "In repetition comes more flawless execution." ■

The case for distribution

Consolidating data centers into fewer locations doesn't always make sense. Here are some key factors to consider if you opt to maintain geographically distributed data centers.

Opportunities:

- Multiple data centers can act as disaster-recovery sites for each other.
- Puts content and applications closer to users.
- Can locate distributed data centers in less-expensive geographies.

Challenges:

- Extra staff is necessary.
- Management complexity.
- Less visibility of "stealth" or unauthorized IT projects.

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DATA 5 LEAK NIGHTMARES

BY JEFF VANCE

Nightmare 1: Film at 11

A high-profile data breach can cost your company millions. Just ask The TJX Companies.

When The Home Depot recently lost a laptop containing personal information on 10,000 employees, it was just the latest in a string of high-profile data-leak incidents. The U. S. Department of Veterans Affairs, TJX, Monster.com, Fidelity National Information Services, Pfizer, AOL, TD Ameritrade — the list goes on and on.

This nightmare gets much worse if you aren't the victim but the one at fault. Consider TJX, which had one of the most publicized data leaks. The attack was certainly the fault of hackers, but according to Carol Baroudi, research director for security technologies at Aberdeen Group, TJX must shoulder some responsibility.

"TJX should never have stored magnetic-stripe information in their databases," Baroudi says. "It was a flawed storage policy. They didn't even realize they were putting personal information at risk."

Worse still, TJX didn't discover the breach — Visa did. The TJX breach has gone from a bad dream to a recurring nightmare, with the company hit by lawsuit after lawsuit, the latest one being an October court filing by credit card companies alleging that the breach hit 94 million credit cards, twice as many as TJX has acknowledged.

Another example is AOL. Its data leak wasn't the result of bad policy, but rather of good (albeit misguided) intentions. At the time of the leak, AOL had a nascent research site to which it posted users' search histories to spur further research. This move inadvertently exposed the Web-surfing habits of many users.

Yes, AOL kept its users' identities secret, but anyone who bothered to dig into the nitty-gritty details of those searches could figure out who was browsing for what, because people often search for themselves, close friends, their hobbies, organizations they belong to, and businesses near them.

AOL employees didn't intend to harm the organization, but such unintentional incidents can be just as bad as malicious ones, if not worse.

Nightmare 2: Messaging misfires

Not protecting e-mail can lead to serious data-leak problems.

George Washington University (GWU) Hospital came close to a data leak that could have had national security implications. Vice President Dick Cheney was scheduled to visit the hospital, and the Secret Service attempted to send a risky, unencrypted e-mail that could have compromised his safety.

"The Secret Service sent an e-mail to those coordinating the visit to inform us about which route they would take through the building, including which elevators," says Amy Hennings Butler, assistant director for security systems operations at GWU. "That kind of sensitive information should not be sent through the Internet — especially as a clear-text e-mail."

GWU dodged this data-leak bullet because it previously had installed a data-leak prevention (DLP) product from Reconnex, which triggered an alarm. The DLP system responded to some of the text, as well as the lack of encryption, and that allowed IT administrators to block the message. The agent who sent the e-mail most likely violated the Secret Service's own data security policies, but it was the university's security that caught it.

"E-mail is still the biggest problem, by far," says G. Oliver Young, an analyst with Forrester Research. "It's ubiquitous, huge amounts of information travel over it, and it's easy to forward documents, without even thinking, that contain sensitive information."

Certain industries, such as healthcare and financial services, are ahead of the curve when it comes to e-mail security because of such regulations as the HIPAA and the Gramm-Leach-Bliley Act. Because of these laws, they've moved beyond the Band-Aid approach of creating policies and trusting the training employees receive.

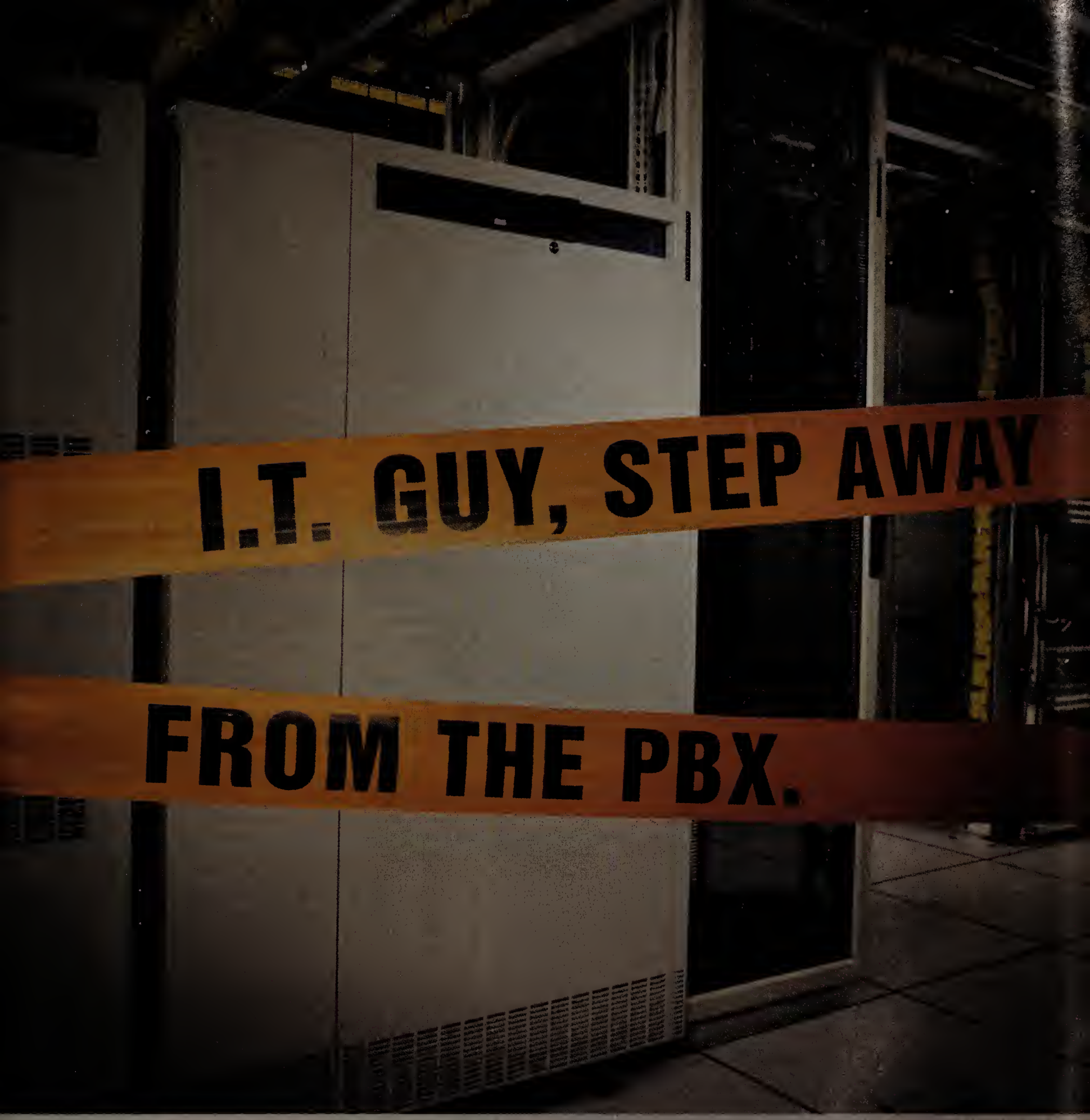
"Even with strong policies, people may not realize they are sending out sensitive data," says John Vander Velde, an officer and manager of IT for Lake Michigan Financial, a holding company for community banks in northern Michigan.

"We put a risk matrix together, and we quickly realized that our biggest risk is e-mail," Vander Velde says. "Even a well-trained employee could inadvertently send out information that could be captured or sniffed."

A July 2007 survey by Forrester's consulting arm, for instance, found that of those surveyed (308 IT professionals at U.S. enterprises with more than 1,000 employees) a third had investigated e-mails in the past year they believed had leaked confidential data.

Commissioned by Proofpoint, the survey also found that respondents estimated approximately 20% of outbound e-mails contain "content that poses a legal, financial or regulatory risk." Meanwhile, more than a quarter of the companies surveyed had terminated an employee for violating corporate e-mail policies in the past year, and 45% had disciplined employees for violating policies.

See Nightmares, page 38



Some things are better left alone.

Before you start that big transition to VoIP, hold the phone. It may not be the grand reconstruction project they've been talking about. Simply stated, it isn't about ripping and replacing or big, upfront costs. That's because it isn't about hardware. It's actually about software. Now you can keep your hardware—your PBX, your gateways, even your phones. Move to VoIP with software. Software that integrates with Active Directory,® Microsoft® Office, Microsoft Exchange Server, and your PBX. Maximize your current PBX investment and make it part of your new software-based VoIP solution from Microsoft. It's big change, without changing it all. Learn more at microsoft.com/voip

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Microsoft

Nightmares

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Lake Michigan Financial concluded it needed technology as a line of defense beyond policy and training. The company eventually turned to a DLP product from Proofpoint. "Solutions like this should benefit the financial industry as a whole," Vander Velde says. "Even if they're rolled out on an institution-by-institution basis, the benefits should be far-reaching."

Nightmare 3: Taxi cab confessions

Losing a laptop, cell phone or USB drive is more common than you might think.

Lake Michigan Financial's second-leading worry is portable data. Using GFI Software's EndPointSecurity, the company prevents users from downloading sensitive data to USB drives or CDs.

"Vista was not up to par to control things at a granular level," Vander Velde says. "We had some departments that used portable storage for backups or so they could work from home." Vander Velde notes that employees did complain at first, because it interrupted their workflows. By offering alternative, secure storage and remote-access options, Lake Michigan Financial made most of them happy.

According to Aberdeen's Baroudi, most organizations are just getting around to the risks associated with lost laptops and haven't even begun thinking about removable storage. The risks, however, tend to be different.

"The difference between a laptop and a USB drive is that with a USB you're intentionally moving data," Baroudi says. Thus, the risks tend to be with insider attacks and IP theft. The hope is that training and policies will at least give workers pause before they download sensitive data. "With a laptop, you may not intend to move data to a less secure place," she says.

According to Accenture's mobility practice, that "less secure place" often is a taxi. Accenture found that the biggest risk to mobile workers isn't poor Wi-Fi security or war driving — which is what most mobile-security plans focus on — but employees who simply forget their laptops, PDAs and mobile phones in taxis.

USB drives, old hard-drives and laptops left in a car's front seat all pose huge risks. Home Depot, Pfizer and the VA all ran into trouble when laptops holding confidential information were stolen. Without preventing sensitive data from getting on these portable devices in the first place, it's nearly impossible to secure against an opportunistic thief or simple forgetfulness.

Nightmare 4: Blabber-blogs

Internal blogs are great, unless employees start spilling company secrets.

Web 2.0, VoIP and other new technologies are driving security pros crazy — at least at organizations on the ball enough to pay attention to them. Take something as simple as blogging.

At Microsoft, the Mini-Microsoft blog has stirred up a bunch of controversy. According to the blog's author, a Microsoft employee who wants to remain anonymous, the blog was started as a forum for "exposing lunch-time conversations of a lot of people going over the issues and concerns they had about Microsoft."

In our e-mail interview with Mini-Microsoft's author, he writes, "You see a lot of deep, well-thought-out, constructive criticism from the inside. I can't say this goes anywhere, even today.... Two years ago, when a lot of the concerns became public, something got done. Would it have happened without the blog? Maybe. Probably not, though."

Aberdeen's Baroudi has a problem with anonymous corporate blogs. "Anonymous blogs are irresponsible. If you feel that strongly and you're unwilling to put your name to it, it loses credibility. If you put your name to it, there's a dialogue," she says.

Could Mini-Microsoft be as effective minus the cloak of anonymity? "Absolutely not," Mini-Microsoft writes. "If I had started this blog under my real name, then I would be shut down quickly by people who would just question how a person working on XYZ could possibly have a say about [an unrelated] project.

"There'd be more criticism for who I was and what my responsibilities are: 'Hey, why don't you blog about how your feature bar is broken?' That's human nature. The mystery allows an assumption of knowledge and provides permission to ponder. And I can't say it would be seen as career empowerment for the leadership up the chain from me."

Advocate blogs pose a serious dilemma for IT security. The anonymous soul-of-the-company ones like Mini-Microsoft are highly valued by employees. Whistle-blower blogs, such as those from the Los Alamos National Laboratory, are even more valuable because they exposed the dysfunctional practices that threatened national security.

However, these blogs do pose risks. If confidential data is leaked, for instance, management has a valid reason to worry. Public relations and marketing executives tear their hair out figuring out how to respond to the bad press that often accompanies these blogs.

Most organizations, however, have no idea how to handle these blogs, and, as a result, either ignore them or make the mistake of trying to shut them down — which usually worsens morale and generates more bad press.

Other new technologies present equal quandaries. Take IBM's Many Eyes, which essentially is a mashup application for visualizing data. "There is a lot of data there that probably shouldn't be," Forrester's Young says. "You can find sales forecasts and corporate income statements." Many Eyes doesn't always show where the data is coming from, but much of it isn't hard to figure out. There is even data from government agencies, including the CIA. If the Secret Service can't be trusted not to send out unencrypted itineraries, it's not a stretch to worry about what it's posting on Many Eyes.

Nightmare 5: Downsizing disasters

Data theft increases during mergers, layoffs and reorganizations. When a company announces a merger — or worse, a downsizing — employee loyalty can be undermined. "The amount of data-offloading during these events is huge," says Robert Yonowitz, a partner with Fisher & Phillips, a firm specializing in labor and employment law.

Often, organizations plan poorly for these events, worsening the problem. For example, if a company announces a 10% staff reduction but doesn't say who is safe and who isn't, the risk of data theft goes up significantly. If your company isn't expecting to downsize or reorganize anytime soon, don't think you can rest easy. The same dynamics are in place, albeit on a much smaller scale, any time key employees change jobs. Employees who leave a company usually have been planning for a month or two beforehand, which is when most data theft occurs.

Yonowitz says 90% of the data loss cases he sees involve customer lists. For instance, when marketing or sales representatives move to competitors, they often promise to bring business with them.

Business relationships fall into a nebulous area. Legally, the company owns the business relationship and the key information the employee gleaned while on the job, but the employee has the right to maintain and update the personal relationships underpinning those larger business relationships. It's OK, therefore, for an employee to announce a job change to key contacts. That person could be violating a non-compete clause, however, if the announcement is more like a solicitation.

The instances that companies lose sleep over, however, usually go well beyond relationship gray areas. "These cases aren't just about people taking names and addresses, but what I call the 'customer playbook,'" Yonowitz says. "These are things like buying habits, contract terms, expiration dates on those contracts, and the status of potential deals that haven't yet closed."

Time is of the essence in these cases. Yonowitz estimates that 90% of the damage is done within two weeks after the employee's departure. If you don't catch the data loss quickly and respond right away, the damage already will have been done.

Vance is a freelance writer. He can be reached at jeff@sandstorm media.net.

Data-leak prevention: Pros and cons

Industry analyst says business processes, not products, stop data from leaking

BY CARA GARRETSON

Anti-data-leakage vendors make bold claims about how far their products can go to protect enterprises from unauthorized information sharing. This irks Nick Selby, head of enterprise security research at The 451 Group, who believes these tools are helpful with some tasks but are far from the solution.

Selby declines to use the industry term "data-loss prevention" to describe these products because he believes such words instill a false sense of security. *Network World* Senior Editor Cara Garretson recently spoke to Selby to find out more about where these tools deliver and where they fall short.

What are anti-data-leakage products good for?

These products are very effective at giving enterprises a great amount of visibility into what's going out of the building. While that seems like a simple thing, it's in fact a sea change — the idea that you can now quantify and see who is sending what where is a tremendous advance.

They can do a great deal with stopping stupidity [users sending out sensitive data without realizing it]. Most customers are using these tools in monitor-only mode to reduce the noise and help internal security do its job by removing stupidity, and that's an extraordinary benefit to businesses.

What's not so good about anti-data-leakage products?

Enterprises don't know where their unstructured data is, let alone where their sensitive data is. Putting a box at the gateway doesn't solve the problem, but highlights it. What do you do once you've identified what's going out the door — run around the building hitting people over the head with newspapers?

What's more, now you're subjected to litigation problems. Imagine the person who has to answer the plaintiff lawyer's question 'You knew three years ago that this stuff was going out the building and you didn't do anything about it?'

Some anti-data-leakage products say they help customers discover and identify their sensitive data. Is that valuable?

The time it takes to classify that data that already exists is such that by the time you're finished, a new mountain exists. Every day information workers create more unstructured data measured in gigabytes if not terabytes. To keep up with the flow while classifying what's already been done is a very difficult challenge.

So if anti-data-leakage tools aren't the answer, what is?

Data leakage is a symptom of a company's misunderstanding the classification of data and where it sits in their enterprise. You have to pick your battles and start out with a limited scope to create IT processes that will solve business problems. So, working between technology and business leaders, there has to be a concerted effort to understand and enumerate the [data-leakage] problem, gather data about the scope of the problem, and create policies that are enforceable to address each area of the problem.

Eventually, the holy grail is management of the information life cycle, where data is classified at birth correctly and appropriately, and that classification follows the data throughout its life. We're nowhere near that.

Why is the anti-data-leakage market so hot right now, with large security companies spending hundreds of millions of dollars to acquire start-ups in this area?

The reason these things are so hot right now is it's easy to understand the problem — the demos [of data leaking out of a company] are so effective they scare the heck out of everyone. But this is attempting to insert a technical fix to what is a business problem. And the business problem is, we don't understand where the data is. ■

Nick Selby, The 451 Group

4 data-leak prevention start-ups to watch

BY JEFF VANCE

1. Code Green Networks

Founded: October 2004

Headquarters: Santa Clara, Calif.

CEO and background: CEO Sreekanth Ravi co-founded Code Green in 2004 with Sudhakar Ravi, the company's CTO. Previously, the two co-founded SonicWall, where Sreekanth Ravi served as chairman and CEO and Sudhakar Ravi as CTO and vice president of engineering.

Funding: The company has secured $32 million from Bay Partners, Sierra Ventures and the company's founders.

What does the company offer? Data-loss-prevention (DLP) appliances that protect customer information and safeguard intellectual property.

Why is it worth watching? The company recently released a modestly priced appliance that targets small-to-midsize businesses and branch offices. In contrast, most vendors focus on large enterprises, giving Code Green a niche in which to establish itself.

Two key features of DLP are data-in-motion (or network) monitoring and data-at-rest discovery. Code Green does not offer data-at-rest discovery, a feature it will need to add as Code Green moves to target large enterprises.

Sreekanth Ravi and Sudhakar Ravi have a solid track record in the SMB market based on their previous experience at SonicWall, and this experience has translated into such features as a wizard-driven setup and prepackaged policy templates, which are tailored to organizations that don't have in-house security experts.

Where did the company get its name? Code Green Networks was named after the Department of Homeland Security's Threat Level System. A "code green" indicates the lowest threat level.

Who's using the product? Signal Financial Federal Credit Union, SonicWall and Sourcefire.

2. Proofpoint

Founded: June 2002

Headquarters: Sunnyvale, Calif.

CEO and background: Gary Steele previously was CEO of Portera, a venture-capital-backed applications company that targeted the professional services industry. Before Portera, Steele was vice president and general manager of the Middleware and Data Warehousing Product Group at Sybase.

Funding: $58 million from Benchmark Capital; Bridgescale Partners; Inventures Group; JAFCO Ventures; Meritech Capital Partners; Mohr, Davidow Ventures and RRE Ventures.

What does the company offer? E-mail security and DLP solutions.

Why is it worth watching? Proofpoint was founded by Eric Hahn, the former CTO of Netscape, and originally focused on e-mail security, from which the company's DLP strategy emerged. The company's products monitor and enforce messaging policies, protecting users from inbound and outbound messaging threats.

A lack of data-at-rest discovery features may be a problem for some potential customers. With e-mail still the biggest threat and the most likely conduit for data theft, however, a DLP strategy that relies on messaging security as the foundation makes sense.

Where did the company get its name? The first half of the name communicates the company's focus on statistical-analysis techniques, as in a mathematical proof. The second half references the company's product providing a single point of administration, analysis and policy application.

Who's using the product? Proofpoint claims more than 1,300 customers worldwide, including Bank of America, DeKalb Medical Center, Hertz and Hitachi Data Systems.

3. Reconnex

Founded: October 2003

Headquarters: Mountain View, Calif.

CEO and background: John Peters was previously the CEO of several venture-capital-backed companies including Yipes Enterprise Services, Netli (now Akamai Technologies) and Sigma Concentric.

Funding: $37 million from NorWest Ventures, August Capital, Levensohn Partners and Outlook Ventures.

What does the company offer? DLP appliances that combine network data-monitoring and data-at-rest discovery features in one platform, while also providing features for controlling portable media and storage ports.

Why is it worth watching? Most DLP solutions do a good job of protecting fixed-format data, such as Social Security and credit card numbers. Guarding unstructured data is a more difficult proposition. Much intellectual property, such as source code, has no fixed format and requires more sophisticated search techniques.

Reconnex relies on indexed searches, which "enable organizations to automatically mine data and define group associations." Indexed searches let organizations find sensitive data via keywords, communication parameters, content types or other customer-defined concepts.

Where did the company get its name? Reconnex combines the words "reconnaissance" and "exposure," referring to the importance of having network visibility control the flow of sensitive data.

Who's using it? The company claims more than 45 Fortune 1000 customers, including WebEx, Sirva, Medstar Health, BCD Travel and George Washington University.

4. Verdasys

Founded: 2003

Headquarters: Waltham, Mass.

CEO and background: Seth Birnbaum previously co-founded NeoGenesis Pharmaceuticals, a privately held biotechnology company, and served as its vice president of engineering.

Funding: Verdasys has not sought venture capital backing, with funding instead coming from company officers and private investors. According to Verdasys, the company is profitable and able to reinvest based on current sales.

What does the company offer? Data security platforms that protect against data loss through integrated file encryption, e-mail encryption, data discovery, forensic reporting, offline data protection and network access control.

Why is it worth watching? Verdasys takes an endpoint-based approach to the data-loss problem. Agents reside mainly on desktops and laptops, but in the more recent versions of the product, Digital Guardian, they also can protect applications and servers.

Verdasys argues that its endpoint-based focus has advantages over network-based control, which has its roots in the old firewall "you're in or you're out" approach to security. An endpoint approach, in contrast, shifts the focus to where information is created, altered and moved — desktops, laptops and other end devices.

Verdasys Digital Guardian discovers, classifies and monitors data use on endpoints, preventing misuse by alerting users to policy violations or blocking high-risk activities while also creating audit trails and triggering alarms when necessary.

Where did the company get its name? The name means "truth in systems." It blends the Spanish word *verdad*, "truth," with "systems."

Who's using the product? Verdasys has more than 100 customers, including Cigna, Humana, Convergys, Broadcom, DuPont, Genzyme, OKI Electronics, Tomin Bank and TD Ameritrade.

Vance is a freelance writer. He can be reached at jeff@sandstormmedia.net.

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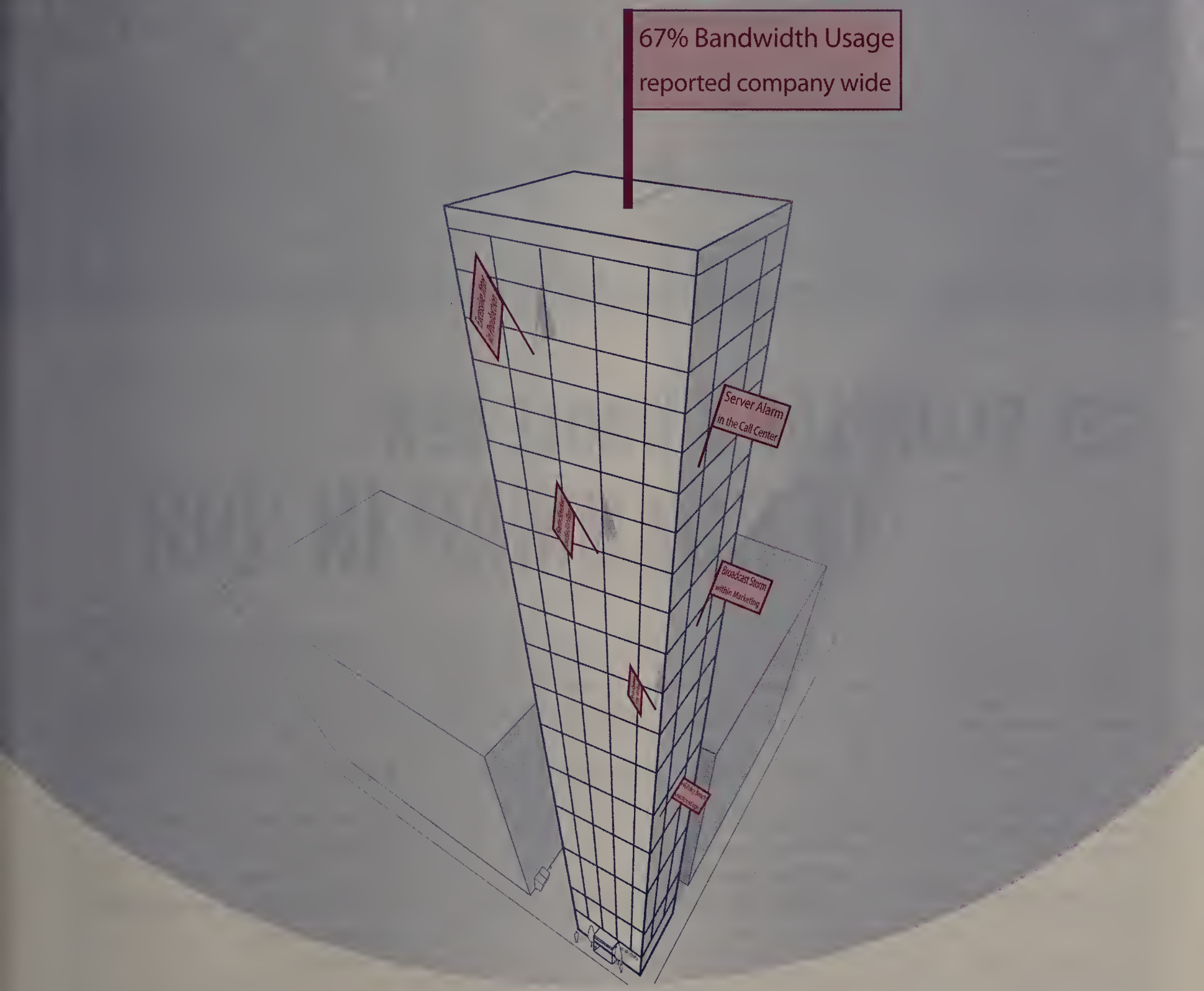

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Double your networking pleasure: Cisco's virtual switching

Catalyst 6500 management blade sets records for recovery and throughput

BY DAVID NEWMAN, NETWORK WORLD LAB ALLIANCE

Virtualization, long a hot topic for servers, has entered the network realm. With the introduction of a management blade for its Catalyst 6500 switches, Cisco can make two switches look like one while dramatically reducing failover times.

In an exclusive Clear Choice Test of Cisco's new Virtual Switching System (VSS), *Network World* conducted its largest-ever benchmarks, using a mammoth test bed with 130 10G Ethernet interfaces (see "How we did it" at www.nwdocfinder.com/3079). The results were impressive: VSS not only delivers a 20-fold improvement in failover times but also eliminates the need for Layer 2 and Layer 3 redundancy protocols.

The performance numbers are even more startling: A VSS-enabled virtual switch moved a record 770 million frames per second in one test, and routed more than 5.6 billion unicast and multicast flows in another. Those numbers are twice what a single, physical Catalyst 6509 can do.

To maximize uptime, network architects typically provision multiple links and devices at every layer of the network, using an alphabet soup of redundancy protocols to protect against downtime (see graphic, page 42). These include rapid spanning tree protocol (RSTP), hot standby routing protocol (HSRP) and virtual router redundancy protocol (VRRP).

This approach works but has multiple downsides. Chief among them is the active/passive model used by most redundancy protocols, in which one path carries traffic while the other sits idle until a failure occurs. Active/passive models use only 50% of available capacity, adding considerable capital expense.

Introducing virtual switching

In contrast, Cisco's VSS uses an active/active model that retains the same redundancy but makes use of all available links and switch ports.

While many vendors support link aggregation (a means of combining multiple physical interfaces so they appear as one logical interface), VSS is unique in its ability to virtualize the entire switch. Link aggregation and variations, such as Nortel's Split Multi-Link Trunk, do not create virtual switches, nor do they eliminate the need for Layer 3 redundancy mechanisms, such as HSRP or VRRP.

At the heart of VSS is the Virtual Switching Supervisor 720-10G, a management and switch fabric blade for Cisco Catalyst 6500 switches. VSS requires two new supervisor cards, one in each physical chassis. The management blades create a virtual switch link (VSL), making the devices appear as one to the outside world: There's one media-access-control and one IP address used, and both systems share a common configuration file that covers all ports in both chassis.

On the access side of Cisco's virtual switch, downstream devices still connect to both physical chassis but a bonding technology called Multichassis EtherChannel (MEC) presents the virtual switch as one logical device. MEC links can use industry-standard 802.1ad link aggregation or Cisco's proprietary port-aggregation protocol. Either way, MEC eliminates the need for spanning tree. All links within an MEC are active until a circuit or switch failure occurs; then traffic continues to flow over the remaining links in the MEC. Servers also can use MEC's link-aggregation support without additional software being needed. Multiple connections were already possible using network-interface-card teaming, but that's usually a proprietary, active/passive approach.

On the core side of Cisco's virtual switch, devices also use MEC connections to attach to the virtual switch. This eliminates the need for redundancy protocols, such as HSRP or VRRP, and reduces the number of routes advertised. As on the access side, traffic flows through the MEC in an active/active pattern until a failure, after which the MEC continues to operate with fewer elements.

VSL links work between any two Catalyst 6500 chassis. For example, virtual switching can be used at both the core and distribution layers or at the core, distribution and access layers. All attached devices see one logical device wherever a virtual switch exists.

A VSL can support as many as eight physical links. Multiple VSL links can be established using any combination of interfaces on the new supervisor card or Cisco's WS-6708 10G Ethernet line card. VSS also requires line cards in Cisco's 67xx series, such as the 6724 and 6748 10/100/1000 modules or the 6704 or 6708 10G Ethernet modules.

At least for now, VSL traffic is proprietary. It isn't possible to set up a VSL between, for example, a Cisco and a Foundry Networks switch.

We assessed VSS performance with tests focused on fabric bandwidth and delay, failover times, and unicast and multicast performance across a network backbone.

In the fabric tests we tried to answer two questions: How fast does VSS move frames, and how long does it hang onto each frame? We attached Spirent Communications' TestCenter analyzer/generator modules to 130 10G Ethernet ports on two Catalyst 6509 chassis configured as one virtual switch. These tests produced the highest throughput we've ever measured from a single device. When forwarding 64-byte frames, Cisco's virtual

NETRESULTS

Product	**Virtual Switching Supervisor 720-10G**
Vendor	Cisco www.cisco.com
Price	Starts at $31,500
Pros	Eliminates need for L2 and L3 redundancy protocols; doubles fabric capacity; reduces failover times; works with servers as well as switches.
Cons	Virtualization is proprietary; switch fabric is blocking in some configurations.
Score	**4.625**

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Action	Weight	Score
Features	25%	**4.5**
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Resiliency	25%	**5.0**
Management	25%	**5.0**
Total score		**4.625**

Scoring key: 5: Exceptional; **4:** Very good; **3:** Average; **2:** Below average; **1:** Subpar or not available.

switch moved traffic at more than 770 million frames per second. We then ran the same test on a single switch, and measured throughput of 385 million frames per second — exactly half the throughput measured when the two fabrics were combined in the virtual switch.

We also measured VSS throughput for 256-byte frames (close to the average Internet frame length) of 287 million frames per second and for 1,518-byte frames (the top end on most production networks) of 53 million frames per second. With both frame sizes, throughput was exactly double that of the single-switch case.

The 1,518-byte frames-per-second number represents a throughput of nearly 648Gbps, about half the theoretical maximum rate possible with 130 10G Ethernet ports. The limiting factor is the Virtual Switching Supervisor 720-10G switch fabric, which can't send line-rate traffic to all 66 10G ports in each fully loaded chassis. VSS doubles fabric capacity by combining two switches, but it doesn't extend the capacity of the fabric card in either physical switch.

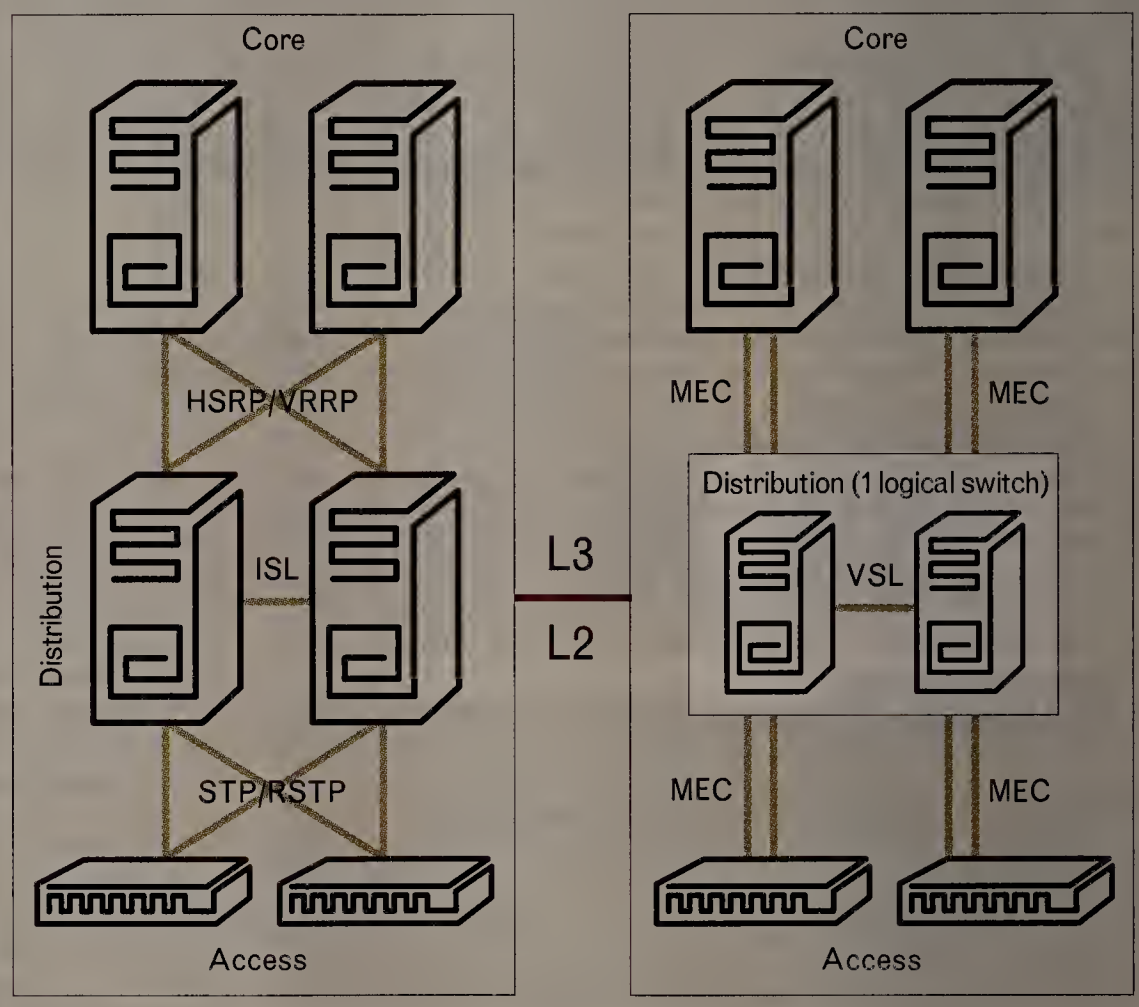
We also measured delay for all three frame sizes. With a 10% intended load, Spirent TestCenter reported average delays of 12 to 17 microsec, with and without virtual switching. These numbers are similar to those for other 10G switches we've tested, and far below the point where they'd affect application performance. Even the maximum delays of around 66 microsec with virtual switching are too low to slow down applications.

Our failover tests produced the fastest recovery from a Layer 2 or Layer 3 network failure we've ever measured. We began these tests with a conventional setup: RSTP at Layer 2, HSRP at Layer 3 and 16,000 hosts sending traffic across redundant pairs of access, distribution and core switches. We cut off power to one of the distribution switches, forcing all redundancy mechanisms and routing protocols to reconverge. Recovery took 6.883 seconds in this setup.

We reran the test twice with VSS enabled, and convergence. It took the network 322 millisec to converge with virtual switching on the distribution switches, and 341 millisec to converge with virtual switching on the core and distribution switches. Both numbers represent better than 20-fold improvements over the usual redundancy mechanisms.

Virtual switching reduces complexity, boosts capacity

The active/passive redundancy model in most network designs doubles port and link requirements (left). The redundancy protocols that must be configured include spanning tree (STP) or rapid spanning tree (RSTP) at Layer 2 and hot standby routing protocol (HSRP) and virtual routing redundancy protocol (VRRP) at Layer 3. In contrast, Cisco's Virtual Switching System creates an "active/active" design by using all available link and switch ports (right). Switches and routers still use multiple physical links to connect to a virtual switch for redundancy, but these other devices use a Multichassis EtherChannel (MEC) in which all links are active until a failure occurs.



A bigger backbone

Our final tests measured backbone performance using a complex enterprise traffic pattern involving 176,000 unicast routes, more than 10,000 multicast routes and more than 5.6 billion flows. We ran these tests with unicast traffic alone and a combination of unicast and multicast flows, and again compared results with and without VSS in place.

We ran all tests with a 10,000-entry access control list in place, and also configured switches to re-mark all packets' differentiated-services code point (DSCP) fields. Re-marking DSCPs prevents users from promoting their packets without authorization so they receive higher-priority treatment. In addition, we enabled NetFlow tracking for all test traffic.

In all the backbone cases, throughput with virtual switching was exactly double the throughput without it. This was true for both unicast and mixed-class throughput tests, and happened regardless of whether we enabled virtual switching on distribution switches alone, or on both the core and distribution switches.

We measured delay as well as throughput in these tests. Delays across three pairs of physical switches were around 26 to 90 microsec, well below the point where applications would notice.

Maximum delays did vary somewhat with virtual switching enabled, but not by a margin that would affect application performance. Curiously, maximum delay increased the most for 256-byte frames, with fourfold increases over results without virtual switching. The amounts were always well less than 1 millisec.

Cisco's VSS is a significant advancement in the state of the switching art. It dramatically improves availability with much faster recovery times, while simultaneously providing a big boost in bandwidth.

Newman is president of Network Test, an independent test laboratory in Westlake Village, Calif. He can be reached at dnewman@networktest.com.

THANKS

Thanks to Spirent Communications for its support of this project. Spirent engineer Brooks Hickman provided on-site configuration and troubleshooting assistance for these tests.

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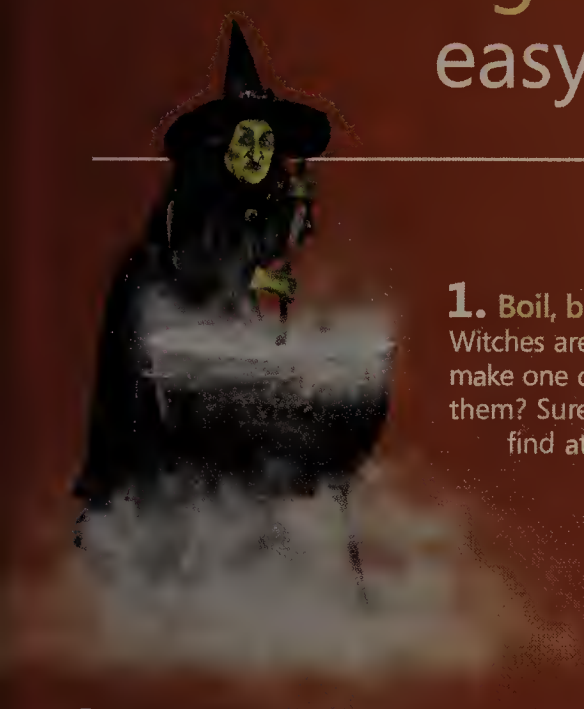

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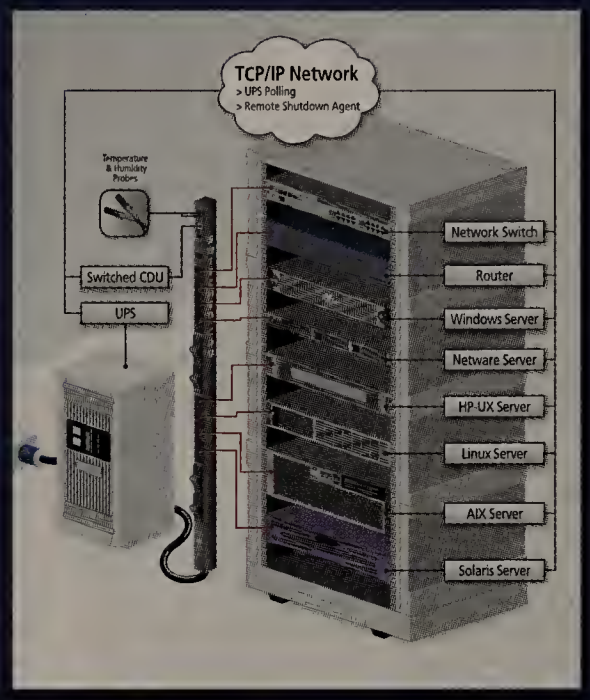

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Carr
continued from page 1

computing shifts out of private data centers and into the cloud. Business units and even individual employees will be able to control the processing of information directly, without the need for legions of technical people."

Carr's rationale is that utility computing companies will replace corporate IT departments much as electric utilities replaced company-run power plants in the early 1900s. He explains that factory owners originally operated their own power plants. As electric utilities became more reliable and offered better economies of scale, however, companies stopped running their own electric generators and instead outsourced that critical function to electric utilities.

Carr predicts the same shift will happen with utility computing. He admits that utility-computing companies need to make improvements in security, reliability and efficiency, but he argues that the Internet, combined with computer hardware and commoditized software, will allow the utility-computing model to replace today's client/server model. "It has always been understood that, in theory, computing power, like electric power, could be provided over a grid from large-scale utilities — and that such centralized dynamos would be able to operate much more efficiently and flexibly than scattered, private data centers," he writes.

Carr cites several drivers for the move to utility computing. One is that computers, storage systems, networking gear and most widely used applications have become commodities. He says even IT professionals are indistinguishable from one company to the next: "Most perform routine maintenance chores — exactly the same tasks that their counterparts in other companies carry out."

Carr points out that most data centers have excess capacity, with utilization ranging from 25% to 50%. Another driver for the move to utility computing is the huge amount of electricity consumed by data centers, which can use 100 times more energy than other commercial office buildings.

"The replication of tens of thousands of independent data centers, all using similar hardware, running similar software, and employing similar kinds of workers, has imposed severe economic penalties on the economy," Carr writes. "It has led to the overbuilding of IT assets in every sector of the economy, dampening the productivity gains that can spring from computer automation."

Carr embraces Google as the leader in utility computing. He says Google runs the largest and most sophisticated data centers on the planet, and is using them to provide such services as Google Apps that directly compete with traditional client/server software from vendors such as Microsoft.

"If companies can rely on central stations like Google's to fulfill all or most of their computing requirements, they'll be able to slash the money they spend on their own hardware and software — and all the dollars saved are ones that would have gone into the coffers of Microsoft and the other tech giants," Carr says.

Other IT companies Carr's book highlights for their innovative approaches to utility computing are Salesforce.com, which provides CRM software as a service; Amazon, which offers utility computing services called Simple Storage Solution (S3) and Elastic Compute Cloud (EC2) with its excess capacity; Savvis, a leader in automating the deployment of IT; and 3Tera, which sells AppLogic, a software program that automates the creation and management of complex corporate systems.

Carr points out that many leading software and hardware companies — EMC, HP, IBM, Microsoft, Oracle, SAP and Sun — are adapting their client/server products to the utility age.

"Some of the old-line companies will succeed in making the switch to the new model of computing; others will fail," Carr writes. "But all of them would be wise to study the examples of General Electric and Westinghouse. A hundred years ago, both these companies were making a lot of money selling electricity-production components and systems to individual companies. That business disappeared as big utilities took over electricity supply. But GE and Westinghouse were able to reinvent themselves."

Carr offers a grimmer future for IT professionals. He envisions a utility-computing era where "managing an entire corporate computing operation would require just one person sitting at a PC and issuing simple commands over the Internet to a distant utility."

He refers to the demise of not only the PC, which he says will be a museum piece in 20 years, but also the software programmer, whose time has come to an end.

Carr gives examples of successful Internet companies, including YouTube, Craigslist, Skype and Plenty of Fish, that run their operations with few IT professionals. YouTube had 60 employees when it was bought by Google in 2006 for $1.65 billion. Craigslist's 22 employees run a Web site with billions of pages of content. Internet-telephony vendor Skype supports 53 million customers with 200 employees. Internet-dating site Plenty of Fish is a one-man shop.

"Given the economic advantages of online firms — advantages that will grow as the maturation of utility computing drives the costs of data processing and communication even lower — traditional firms may have no choice but to refashion their own businesses along similar lines, firing many millions of employees in the process," Carr says.

IT professionals aren't the only ones Carr sees meeting their demise. He saves his most dire predictions for the fate of journalists: "As user-generated content continues to be commercialized, it seems likely that the largest threat posed by social production won't be to big corporations but to individual professionals — to the journalists, editors, photographers, researchers, analysts, librarians and other information workers who can be replaced by . . . people not on the payroll."

Carr's argument about the future of utility computing is logical and well written. He offers a solid comparison between the evolution of electrical utilities in the early 1900s and today's development of utility computing. His later chapters — about the future of artificial intelligence and the many downsides of the Internet — seem less integral to his utility computing argument. ■

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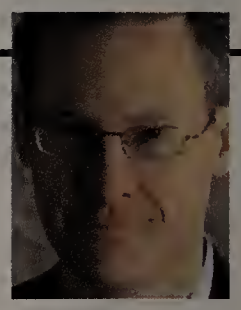

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BACKSPIN

Mark Gibbs

2008: Time for outrage and speaking up

In January last year I wrote that 2006 was "The Year of Not Enough Outrage" and I'm disappointed to say that, looking back, I don't think 2007 was any better on that score.

I'm thinking of several issues that arose last year. How about the conviction of Julie Amero in January? Amero, a substitute seventh-grade teacher, was "found guilty on four counts of risk of injury to a minor, or impairing the morals of a child" when a classroom computer began displaying pornographic images. The PC didn't have antimalware software installed and the technical evidence in her defense was disregarded. This was a great example of the public bureaucracy's willful ignorance of computer technology.

Were we all outraged enough to flood the prosecutor and our congressperson's offices with letters expressing our disgust at the whole mess? Nope, not before or after the conviction. Sure, there were lots of blogging and opinion pieces about the insanity of the case, but that's not the same as making sure those who live and die by public opinion actually know the opinion of the public. (Amero's conviction was subsequently thrown out and sent for possible retrial, so she may have to go through the whole ordeal all over again in 2008.)

How about the utter nonsense of prosecuting people for using unsecured wireless connections? This has been going on since 2003, but last year the nonsense raised to a new level in the case of Sam Peterson II, who was nabbed under a Michigan law for using an open access point even though the access point's owner didn't care.

Given the current shrill and overwrought policies (banning cosmetics in carry-on airplane luggage) on homeland security, you'd think the law would be against open Wi-Fi access points as a matter of national infrastructure security. But no, the lowest common denominator — profound, unremitting ignorance — is still the winner.

Want more? How about the Recording Industry Association of America (RIAA)? Despite the huge amount of negative press this organization attracted in 2007, there's still no effective public outcry against what is, in reality, a cynical, systematic program of disinformation and legal bullying.

Just consider the RIAA's endless and highly suspect lawsuits against supposed abusers of copyright. The organization's methodology of using dubious forensics to threaten and extort money from the parents of random teenagers, college students, single mothers and so on is, to put it mildly, disgraceful. But are we so outraged that we've boycotted the products of the RIAA's members? Nope. Have we deluged Congress with our complaints about what would have once been considered blatantly un-American behavior? Nope again.

So, what should we do about it? As Mrs. Gibbs and I were discussing our personal and joint resolutions for a happier and healthier 2008, I got to wondering about what resolutions the IT world should be making. I think one of the biggest things we should resolve to do is speak up.

There's a huge gulf between IT — the guys who understand computers and networking — and everyone else. The need for IT experience to be publicly considered is crucial when decisions affecting public policy are involved, whether it is in the making of laws or their enforcement.

So, will 2008 be the year that, when technology is involved in public policy, the IT world will speak out and attempt to keep everyone honest, rational and relevant? I hope so. Now it's up to you.

Gibbs is frequently outraged in Ventura, Calif. Join his foaming at the mouth at backspin@gibbs.com.

NETBUZZ

News, Insights, oddities

Paul McNamara

8 can't-miss tech predictions — for 1998

Don't knock 20-20 hindsight until you've tried it.

1. Prediction: Compaq to buy DEC.

The skinny: Fresh off last year's acquisition of Tandem, Compaq will look to get its grubby little paws around the detritus of Digital Equipment Corporation. Why is anybody's guess, but that's what insiders are whispering.

Long-term outlook: CEO Eckhard Pfeiffer won't have to worry about the Y2K problem (oh, you haven't heard?) because his shopping days are numbered. HP's said to be sniffing around Compaq, by the way, although it's difficult for me to believe.

2. Prediction: Internet to lose its innocence.

The skinny: In a first-of-its-kind case, a California jury will convict a U.C.-Irvine dropout, Richard Machado, of sending threatening and hateful e-mail to students of Asian descent.

Long-term outlook: Law enforcement's no-nonsense approach here will pay big dividends down the road as the 'Net remains a beacon of civility leading society into a utopian 21st century.

3. Prediction: FDA to give Viagra thumbs-up.

The skinny: Granted, this isn't technology in the classic sense, but government approval of the first treatment for male impotence will mark a momentous scientific achievement. Smiles and snickers to ensue.

Long-term outlook: Copycats will abound, as will television ads — yes, really — and the general public eventually will learn the meaning of the word priapism.

4. Prediction: Apple to introduce "iMac."

The skinny: My mole in Cupertino says it will look like an egg and come in multiple shades of translucent plastic, if you can believe it.

Long-term outlook: The iMac will revolutionize personal computing and spawn legions of — let me coin a phrase — fanboys. But Steve Jobs despises product leaks almost as much as he does being mocked, so I fear my mole may find trouble.

5. Prediction: U.S. to sue the pants off Microsoft.

The skinny: This one's been brewing for some time. An antitrust action for the ages will see Microsoft crying Uncle Sam, while the company's critics scream for a Bell-like breakup.

Long-term outlook: Seriously, I'm expecting to see Bill Gates frog-marched down the courthouse steps when this one is over … sometime around 2018 or so.

6. Prediction: Congress to pass Digital Millennium Copyright Act.

The skinny: Congress will approve the DMCA by a unanimous vote because, well, everyone favors copyright protection.

Long-term outlook: The only trouble that I can foresee would be if someone were to launch a Web site that allowed anyone and everyone to post video clips of whatever they pleased. That might get sticky.

7. Prediction: Netscape to go on the block.

The skinny: Who'd want to buy Netscape? I mean in 1998? Makes no sense, so naturally the first name that comes to mind is AOL.

Long-term outlook: Death by a thousand paper cuts.

8. Prediction: An AltaVista killer to emerge.

The skinny: You're thinking no way, what with AltaVista attracting 80 million hits a day, but there's talk of a couple of Stanford guys and their amazing search engine called Giggle or Gargle or some such that's creating Hollywood-style buzz. I know a guy who knows a guy who's seen a demo, and, well, how do I get me a piece of the IPO?

Long-term outlook: This is going to be huge, people, so I'm going way out on a limb here: In 10 years tops, this company — Google wouldn't be a bad name — will dominate the Internet, make billionaires out of those Stanford guys and, get this, the name itself will become a verb.

Good thing no one ever checks back on these predictions.

Send your predictions to buzz@nww.com.

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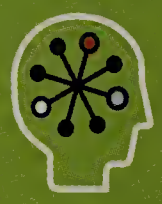

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